Consultative Group on International Agricultural Research – CGIAR

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The CGIAR at 25: Into the Future

Report of the CGIAR Task Force on Central/Eastern Europe and the Former Soviet Union

The attached report is the product of the Task Force, which was established following the Lucerne Ministerial-Level Meeting. One of the Lucerne resolutions was that the CGIAR should undertake research in Eastern Europe and in countries of the former Soviet Union, after carrying out an analysis to determine options for decision-making. The Task Force presented an interim report at the Mid-Term Meeting in Jakarta. This final report makes a number of recommendations to the CGIAR, to Centers, and to TAC, which include: (1) expanding the geographic mandate of the CGIAR to include these regions; (2) increasing Member financial support for activity in these regions - above and beyond what is available for the current Research Agenda; and, (3) further implementing specific Center/NARS projects in the short to medium term, concurrent with developing an overall strategy for CGIAR in all the regions, and with special emphasis in Central Asia. The Group is requested to consider the recommendations and to decide on the proposed steps.

The report will be presented by the Chair of the Task Force, Professor R. Rabbinge, and will be discussed under Agenda Item 3, *Research Agenda*, on Friday, November 1, 1996.

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Dr. I. Serageldin
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USA

October 8, 1996.

Dear Ismail,

At ICW 1995 the CGIAR established a Task Force to assess if and what research collaboration should be strengthened or shared with the 28 countries of Central and Eastern Europe and the former Soviet Union. The Task Force was appointed early in 1996, and began its activities immediately. As Chair of the Task Force, I am pleased to report that the work is now complete. The results are detailed in the enclosed final report.

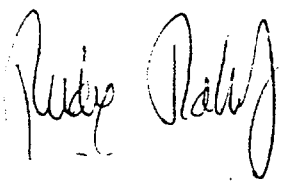
Our main conclusion is that intensified CGIAR involvement in the region is timely and urgently needed. Everyone will benefit from strengthening the region's agricultural research infrastructure and integrating it into the mainstream of international research through the CGIAR. We were impressed with the dedication of the NARS leaders and researchers and their willingness to play a role in addressing larger issues of agricultural development both within and beyond their national borders. The region's tremendous agricultural potential and its urgent need for agricultural research and innovation is clear.

In our deliberations, we divided the region into two groups and five subgroups of countries. The groupings are based on: opportunities for CGIAR collaboration; the need for CGIAR activities; and agricultural, socio-economic and environmental characteristics. The report describes the needs and possibilities for CGIAR involvement with each group of countries. It also contains overall observations, conclusions, and specific recommendations. We believe that all the terms of reference of the Task Force have been fulfilled. We hope that the report is endorsed by the Group and that donor support will follow. The world community needs it.

Members of the Task Force are convinced more than ever that the CGIAR must expand its activities in Central Asia, that intensified participation of all 28 countries is desirable, and that the various levels of collaboration in the Task Force report should be used for a clear description of CGIAR policy. Agricultural research will play a critical role in the development of all countries covered in the report. The CGIAR cosponsors and donors must accept the challenge to provide additional funds for agricultural research. They must also convince the region's leaders of the importance of the rural areas and agriculture, and that policy and structural obstacles must be overcome quickly.

The cooperation in the Task Force was stimulating. The Secretariat did a wonderful job. Several Center staff participated as observers in Task Force meetings, as well as at the NARS Consultations. Their input and contribution to the process and the report were very constructive and helpful. TAC was involved through informal contacts, and a TAC Member participated as an observer in the Tashkent Consultation in September. The CGIAR thus demonstrated its willingness to work with the regions' NARS. In its second quarter century, this expansion of CGIAR activities may be an adequate answer to its mission.

Yours sincerely,



Prof.dr.ir. Rudy Rabbinge
Task Force Chair

advance copy of final report

REPORT OF THE

CGIAR TASK FORCE ON CENTRAL/EASTERN EUROPE AND THE FORMER SOVIET UNION

October 1996

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ANNEXES

1. Observations, Conclusions, and Recommendations

OBSERVATIONS

The Task Force ***notes*** that its investigations of research needs of the various countries in the Central/Eastern Europe and former Soviet Union (CEE/FSU)[1] were extensive but not complete, and therefore investigations should be continued by CGIAR Centers, to develop a detailed assessment of the questions and research problems in CEE/FSU.

The Task Force ***notes*** that, notwithstanding the preliminary nature of many investigations to date, Centers are already developing project plans, based on requests from NARS in CEE/FSU. In addition, other high-priority activities, such as irrigation and water management research in Central Asia, as yet have not been sufficiently discussed with potential partners and therefore are not developed to the project proposal stage.

The Task Force ***notes*** that the estimate of annual financial requirements for currently proposed activity is about $5 million, at least for the initial 3-4 years. This would represent less than 2% of CGIAR Research Agenda funding. The Task Force believes that, in all cases, project contents are congruent with needs in the regions, but that the estimated financial requirement is based on proposals which are in some cases still being refined.

TASK FORCE CONCLUSIONS

Geographic Mandate: There are compelling reasons why the CGIAR should extend its mandate to include CEE/FSU. By doing so the system will: remain attentive to changing global needs; through its agility and responsiveness, make an important impact on global and regional food security and the preservation of natural resources; and, demonstrate that the CGIAR is needed today as much as it was when it was created 25 years ago.

Regional Perspectives: The mandate area should be separated into two target regions (Central/Eastern Europe and Central Asia/Caucasus), to be treated differently, as necessary for program purposes, by Centers, TAC, and the CGIAR[2]. There are considerable commonalities between the people and the countries of the regions, notwithstanding the fact that the country groups differ in, among other things, average per capita GNP, actual agricultural production and potential, agro-ecological characteristics, and relations with other organizations.

Poverty Indicators: Central Asian and Caucasus Republics have per capita GNP levels which are below the average for LDCs, and therefore it is justified on this basis alone that these countries should qualify for CGIAR support.

Comparative Advantage: Many of the problems in agricultural sector, agricultural systems, and agricultural research in CEE/FSU fall within the CGIAR mandate. Based partly on

[1] The term "former Soviet Union" is used as a descriptor only.
[2] See page 9 for a details on country composition of the regions, as adopted by the Task Force.

discussions involving many Center representatives, and partly on perceptions of NARS representatives, there is a strong conviction that the CGIAR has a comparative advantage in helping find solutions to the regions' institutional and programmatic problems.

CGIAR System Priorities and Strategies: CGIAR investments in the regions should be based on priorities and a strategy as determined by NARS, the Centers, and TAC. However, the Task Force notes that there are, presently, several high priority research proposals under discussion. The Task Force believes it would be desirable that interested Centers, together with NARS, develop these further and, in parallel, start to develop a longer-term strategy.

Research Agenda: The CGIAR Research Agenda should not be expanded to address certain national priorities, as articulated by national researchers and policy-makers in the NARS consultations, that fall outside the CGIAR mandate. The CGIAR role is and should remain research-based, and Center participation in a non-research capacity in large scale development projects, or as a financial conduit in system improvements, for example, is not appropriate.

Two-Way Partnerships: There is potential for CGIAR collaboration, especially in Central and Eastern Europe, with more advanced institutions and researchers which can result in scientific and financial benefits for both the NARS and the CGIAR, if efficient contracting and collaborative mechanisms are developed and tested, especially in areas such as biotechnology, etc.

Potential Activity: The Task Force identified 5 levels of possible CGIAR activity in CEE/FSU, increasing in complexity and investment requirements with each level. They are:

1. ***Access to Information***: In all regions the lack of up-to-date information is a major constraint, and it is an area where the CGIAR can assist, at low cost. Specific activities include: distribution of catalogue(s) of CGIAR agricultural research activity; distribution of Center publications to NARS organizations; compilation and distribution of relevant "gray literature" available at Centers, network and training materials, etc.; sharing of duplicate copies of scientific journals, books, etc., as well as older literature/documentation not needed at Centers but which could be useful to NARS; and, inviting scientists from the region to seminars, workshops, and conferences.

2. ***Access to Genetic Resources***: In all regions a valued contribution from the CGIAR is germplasm. Increased access to this can take, among others, the following forms: distribution of Center seed material for testing in NARS germplasm trials; inclusion of some NARS in CGIAR networks for germplasm assessment and evaluation; more systematic efforts from centers to request and evaluate germplasm from countries in the regions; continued and expanded involvement of IPGRI and other Centers to include national systems in international plant genetic resource networks as well as development and improvement (or rehabilitation) of national genetic resource conservation systems, where needed.

3. ***Transformation of National Agricultural Research Systems***: In light of the major changes in organization at all levels in Central/Eastern Europe and former Soviet Union, a common need is to assist with restructuring and improving operating effectiveness of national research systems in the agricultural sector. The assistance, which would require

additional financing of up to $500,000 in each of the two major sub-regions, must take into account: differences in sophistication and status in countries of research policies, infrastructure, human resources, etc.; how to help integrate the NARS into the international community; identification of training needs; identification of technical assistance requirements and also assistance in finding sources of funding for such assistance.

4. ***Intensification/Realization of Existing/Potential CGIAR Activities in the Regions***: Existing collaboration with NARS in the regions should continue. CGIAR Centers are presently planning project activities in different sectors, mainly in Central Asia. Of the project activities which are presently on-going or under development, the following appear to be of especially high priority, in the opinion of the Task Force:

Activity	Center	CGIAR Undertaking
Collaborative Research for the Development of Sustainable Agricultural Production in Central Asian Republics *(under development)*	**ICARDA**	**Productivity**
Wheat Germplasm Development for Central Asian/Caucasus Republics (under development)	**CIMMYT**	**Productivity**
Sustainable Crop and Forest Genetics Resources Programmes in Eastern Europe and the FSU (ongoing but proposed for expansion)	**IPGRI**	**Saving Biodiversity**
Research on Evolution of the Organization of Agricultural Research in Developing Transition Economies (under development)	**ISNAR**	**Strengthening NARS**

5. ***CGIAR Strategy for the Regions***: The final level is the development of a coordinated CGIAR network to address countries' needs based on a strategy for the regions, i.e. a long-term plan of action. This should be pursued even as existing project proposals get underway. This approach is justified since the regions' NARS involvement in the international agricultural research community is just beginning, and a planned approach would maximize the value of scarce CGIAR resources for these regions. It is also justified because there is not, at present, any single Center with an ecoregional responsibility in the regions.

TASK FORCE RECOMMENDATIONS

To CGIAR Members:

1. That the CGIAR expand its geographic focus to include Central/Eastern Europe and the former Soviet Union (CEE/FSU), where there are agricultural research and institutional problems and opportunities which justify CGIAR involvement, and where the CGIAR has a comparative advantage in solving the problems.

2. That CGIAR Members and others provide additional funding for CGIAR activity in CEE/FSU, but not that the CGIAR should establish a new "CEE/FSU Fund". Development, approval, and financing for projects in the region should be carried out following conventional CGIAR procedures and policies.

3. That all CGIAR activities in CEE/FSU should be part of the CGIAR Research Agenda. Therefore TAC should review such projects in the context of Centers' Medium Term Plans (1998-2000) and subsequent annual Research Agenda proposals, mindful of the circumstances in which these countries find themselves, including the need to address overarching economic and agricultural policy constraints, as the economies of the countries become more decentralized and market-driven.

To the CGIAR Centers:

1. That relevant CGIAR Centers should strengthen existing activity and interests in CEE/FSU, that new initiatives should be undertaken, and that a coordinated effort should be started to develop **CGIAR strategies** for the regions.

2. That, in light of universal recognition and requests for assistance from all NARS consulted in this exercise, ISNAR assume leadership responsibility for level three activity including: assisting with establishment of NARS leaders' Regional Fora (one for Central/Eastern Europe and one for Central Asia/Caucasus), and for helping to improve national research organization and management capacity.

3. That Centers pursue level 1-3 activities in all regions, while support for level 4 and 5 activities should be directed at Central Asia/Caucasus. NARS in the Central/Eastern Europe region, however, could participate in multi-regional networks for certain activities at level 4-5 (eg:germplasm testing or conservation activities for crop/forest genetic resources).

4. That CGIAR programs in the Russian Federation be confined, in the near term, to level 1-3 activity as described above (plus participation in relevant networks), until a CGIAR strategy, which would better identify potential partners and priorities, is developed. At the same time, many agricultural development projects, financed by different donors, could greatly benefit from the early involvement of different CGIAR Centers. Non-CGIAR project funds, if available, could be used to finance such participation.

5. That information-sharing and exchange of germplasm in all regions (activity levels 1 and 2) should be carried out by Centers individually. Centers should invite NARS scientists to participate in workshops and conferences when appropriate.

6. That Centers which pursue research programs in Central Asia and the Caucasus should establish a **CGIAR Center focal point ("facilitator")** for CGIAR activities in level 4 or 5, the purpose being to ensure communications are efficient and administrative workload is minimized. The facilitator (or facilitating Center) should be decided upon by Center Directors.

7. That **technical leadership** for the different CGIAR projects in activity levels 4 and 5 be assigned to the respective collaborating Centers, not the facilitator.

8. That activities at various levels should be carried out concurrently, not necessarily consecutively. Once specific projects are underway, there will continue to be a need for enhanced information-sharing, integration into the international scientific community, NARS restructuring, etc. Furthermore, the "lower-level" activities are relatively low-cost, and require follow-up but not excessive financial resources.

9. That CGIAR Centers follow common procedures and budgetary practices, in order to avoid inadvertent creation of different standards and operating procedures with NARS that have limited experience of working with international organizations.

10. That CGIAR Centers, where relevant, seek partnerships and contracts with research organizations in the regions which may be able to provide high-value products (biotechnology, etc.) at a lower cost than at CGIAR Centers, or at other Advanced Research Institutes (ARIs).

To NARS Managers and Scientists:

1. That the Prague group of Central and Eastern Europe NARS (including universities and academies of science as well as Ministries of Agriculture), and the Tashkent group of NARS (Central Asia and Caucasus), should each establish themselves as a Regional Forum. They should meet annually to: discuss mutual interests; strengthen collaboration amongst each other and with the CGIAR; and, monitor the structural changes in the organization, financing, orientation, and content of research. Such a Forum is also needed by both the NARS and CGIAR Centers, to provide a focal point and communication link for the CGIAR, especially in the early stages of activity development in the regions.

2. That where possible, NARS institutions especially in the wealthier countries, provide co-financing for activities with the CGIAR.

To the World Bank and other International Organizations:

1. That Executive Directors and the President of the World Bank, as well as senior officials of other international institutions and regional development banks, support and urge policy makers in the region also to support increased investment in agricultural research, since the agricultural sector plays such an important role in economic development. Infrastructure improvement, market development, extension, and credit facilities are of vital importance for the rural sector and for the further economic and social development of the countries.

Eastern Europe

1. Russian Federation
2. Ukraine
3. Belarus
4. Moldova

Baltic States

5. Estonia
6. Latvia
7. Lithuania

Central Europe

8. Albania
9. Bosnia & Herzegovina
10. Bulgaria
11. Croatia
12. Czech Republic
13. Hungary
14. FYR of Macedonia
15. Poland
16. Romainia
17. Slovak Republic
18. Slovenia
19. Fed.Rep of Yugoslavia (Serbia/Montenegro)

Central Asia

20. Kazakstan
21. Kyrgyz Republic
22. Mongolia
23. Tajikistan
24. Turkmenistan
25. Uzbekistan

Caucasus

26. Armenia
27. Azerbaijan
28. Georgia

SEPTEMBER 1996

IBRD 28344

2. Introduction

The Consultative Group on International Agricultural Research (CGIAR) is the major international actor within the global agricultural research system. The CGIAR assists and collaborates in developing countries to solving present problems related to food security, poverty, and conservation of natural resources. The CGIAR also prepares for and anticipates future problems. The CGIAR is involved in the rapidly increasing globalization of agricultural research, and seeks to ensure that all regions and countries benefit from this.

With regard to Central/Eastern Europe and the former Soviet Union (CEE/FSU), it has been widely accepted that agriculture is at present rapidly changing, and will face tremendous challenges. Production and productivity are decreasing, poverty has become more serious and more visible, and problems of natural resource conservation, while being increasingly recognized, are not yet sufficiently dealt with. The nutritional standards of many people have decreased during the last decade. Agriculture is no longer the engine of economic development, and its contributions to export earnings have fallen. Many countries are forced to reduce their agricultural exports. Food consumption habits have changed, with an increased calorie intake from grains and staple commodities, as meat consumption decreased.

If the national economies are to grow in these mostly agricultural-based economies, then agricultural research must be given higher national priority and must be made more efficient and effective, with better internal links as well as good integrated networking and cooperation with advanced agricultural research institutions. There may be a limited "window of opportunity" when, with focused attention and financial inputs, rapid improvement in the agriculture sector can occur.

The agricultural research system has an important role to play in the agriculture sector in CEE/FSU. These countries (and particularly the Central Asian Republics) are significantly underinvesting in agricultural research and supporting services, which will adversely affect their objectives of food security, rural well-being, and sustainable natural resource management. It is important to reorient and revitalize the agricultural research system in these countries to provide the needed knowledge and technological support to assist the agricultural reforms ongoing in these countries.

The various CGIAR stakeholders are convinced that the CGIAR cannot remain on the periphery of efforts to contribute to food security, to reduce poverty, and to improve protection of the environment in this very large area of the world. The large Central Asian countries and Mongolia are close to China, which has 21% of the world's population but only 7% of the world's arable land. CEE/FSU covers approximately 20% of the world's arable land, and has over 7% of the world population. Several countries of Central Asia and Eastern Europe are clearly in the LDC category in terms of poverty and other social and economic indicators.

The Task Force believes that the situation in CEE/FSU now is comparable to that of many parts of the developing world when the CGIAR was created: problems require urgent attention from the international community. Apart from the CGIAR there appear to be few, if any, alternate sources of technical expertise for CEE/FSU which are as relevant, all-inclusive, and which are available for rapid mobilization. The cost of starting afresh would far exceed the investments which will be required in the immediate future through the CGIAR, if the CGIAR does not move to include this region within its mandate.

3. Background to the Task Force

At the 1995 Lucerne meeting, the possibility of undertaking research in Eastern Europe and countries of the former Soviet Union (CEE/FSU) was raised. The region has up to now been outside the CGIAR focus, except for the IPGRI program on crop and forest genetic resources, and several other essentially ad hoc and limited collaborative efforts of a few CGIAR Centers.

At ICW95, the CGIAR agreed to form an expert group to assess if and what kind of program should be undertaken in CEE/FSU. A Task Force (TF) was assembled in early 1996 (annex I), and met three times (in The Hague, Prague, and Tashkent). An interim report was presented at MTM96; this is the TF's final report. The TF gratefully acknowledges the financial support received from The Netherlands and Canada, and the assistance from and participation in its activities, of many CGIAR Center personnel.

Task Force Terms of Reference:

1. to determine if there is a demand and a need for CGIAR collaboration in CEE/FSU, and if so, to identify the boundaries and nature of the response which could be justified;
2. to determine if there is a potential response (interest, fit, and comparative advantage) from CGIAR Centers, i.e. services, collaborative programs, partnerships, etc.;
3. to recommend to CGIAR Members whether the Research Agenda should be expanded, and if so by how much initially and for which specific activities;

Framework: Conditions to be Satisfied as a Prerequisite to a CGIAR Program

- a defined program of work must be identified and justified;
- the CGIAR must have a clear comparative advantage in carrying out such a program;
- incremental financing must be available, to preserve the existing Research Agenda.

Task Force Activity in Response to its Terms of Reference

1. Examination of Collaboration Potential: The demand and need for CGIAR collaboration in CEE/FSU was assessed, partially through the vehicle of regional consultations in Prague and in Tashkent, and partially through a review of existing agriculture sector activity.

2. Assessment of CGIAR Capacity: The interests, ability and potential advantage of the Centers was assessed, through involvement of Center personnel in the TF meetings, in the regional consultations, and through a Task Force questionnaire.

3. Inventory/Database Development: An inventory of CGIAR and World Bank activity in the countries of focus of the TF has been compiled; a database is being established at ISNAR to contain the institutions involved in agricultural research.

4. Interaction with Concerned NARS: The TF assisted the Czech Agriculture Chamber with a meeting for NARS leaders in Central and Eastern Europe (Prague May 6-7, 1996); a similar meeting in Tashkent (September 5-6) was organized by the TF with the assistance of ICARDA. The summary proceedings of these meetings will be available shortly.

6. *Research Agenda*: The TF does not recommend an expansion of the Research Agenda, but does recommend that the CGIAR extend it geographical mandate to include CEE/FSU..

4. Overview of the Regions

Introduction

To better understand and approach effectively the diversity of CEE/FSU the Task Force divided the mandate area into two major target regions (these are for CGIAR deliberations only - it is not a political or geographic categorization). It is difficult to characterize a region as large[3] and diverse as Central/Eastern Europe and the former Soviet Union (CEE/FSU). Reasons include: (1) history of agricultural production and agricultural institutions; (2) differences in size and prosperity; (3) large variation in other development indicators; (4) variable size, sophistication and staffing status of research institutions; (5) changing agricultural production and consumption trends; (6) varying severity of scientists' isolation from the international community; (7) varying degrees of centralization.

To highlight the dimensions of potential CGIAR involvement some important characteristics and regional issues are described below, and in annex II are highlights of a TF-commissioned study[4] on CEE/FSU agriculture. The Task Force also carefully reviewed the CGIAR Oversight Committee (OC) report[5] on a potential policy towards the regions, which was presented to the Group at the 1994 New Delhi Mid-Term Meeting. That report recommended conditions for CGIAR activity which, to some degree, formed the basis of the terms of reference of the Task Force (required additionality of financing, importance of the poverty criterion for support, etc.). The OC report also provided some key analyses of the agricultural potential and research needs in the regions[6].

The countries of these two groups differ in, among other aspects, per capita GNP, history of agricultural life and their agricultural sector, agricultural production and potential, agro-ecological characteristics, and relations with other international organizations.

The first region is Central/Eastern Europe, composed both of countries which had been independent but members of the Soviet Bloc (plus the former Yugoslavia), as well as newly independent countries which were heretofore part of the Soviet Union.

The Task Force further sub-divided Central/Eastern Europe into three sub-regions:

- Eastern Europe: Russian Federation, Ukraine, Belarus, Moldova.
- Baltic States: Estonia, Latvia, Lithuania.
- Central Europe: Albania, Bosnia & Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, FYR of Macedonia, Poland, Romania, Slovak Republic, Slovenia, Fed. Rep of Yugoslavia (Serbia/ Montenegro).

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[3] The region has 19% of the world's land mass (and 20% of global arable land), and 7% of the world population (source: *Human Development Report, 1996* (UNDP).

[4] *Agricultural Knowledge Systems in the Transitioning Economies, A Survey of World bank Experiences*, Jitendra P. Srivastava and Christina Reinhard. Agriculture and Natural Resources Department, Agriculture and Forestry Systems, The World Bank. (published by the CGIAR).

[5] *Proposal for a CGIAR Policy Toward Eastern Europe and the Newly Independent States of the Former Soviet Union.* CGIAR Oversight Committee, document MT/94/11, April 20, 1994.

[6] The data cited in the Oversight Committee paper on yields, etc. in several regions are not directly comparable to those described in this section, due to different country groupings used, and more recent data.

The second region, sub-divided by the Task Force into two, comprises the newly independent republics of Central Asia east of the Caspian Sea, and the Caucasus, all of which were part of the former Soviet Union:

- Central Asia: Kazakstan, Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan.[7]
- Caucasus: Armenia, Azerbaijan, Georgia.

Though there are a number of reasons - touched on above - why the Task Force makes the distinction between these two main regions, the overriding factor is that it becomes clear very quickly that the Asian Republics are much more similar to the "traditional" CGIAR countries in terms of relative poverty, the need for strengthening NARS, etc., than are the countries of Eastern Europe. In terms of the CGIAR's comparative advantage, therefore, the Task Force sees a more limited scope for intervention in Eastern and Central Europe, and therefore finds it appropriate to deal with the regions separately.

Population and Economic Indicators

Table 1 below shows basic comparative economic indicators for various regional groupings, including Central/Eastern Europe and Central Asia/Caucasus.

Table 1

Selected Indicators by Region, 1993

Region / Indicator	Human Development Index (HDI) 1/	GNP per capita (US$)	GNP annual per capita growth (%) (1980-93)	Real GDP per capita (PPP$)	Agriculture in GDP (%)
Central/Eastern Europe 2/	***0.773***	***1,984***	***-1.2***	***4,387***	***17***
Central Asia/Caucasus 2/	***0.662***	***776***	***-3.8***	***2,346***	***34***
All Developing Countries	0.563	970	3.9	2,703	15
Industrial Countries	0.909	16,394	1.2	15,211	3
World	0.746	4,570	3.3	5,545	6

source: Human Development Report 1996 (UNDP).

1/ The UNDP Human Developent Index (HDI) is a composite of achievements in three fundamental dimensions: a long and healthy life (life expectancy), knowledge (educational attainment), and a decent standard of living (income).

2/ Simple (non-weighted) averages used to separate the data into these two regions. Neither Mongolia nor the states of the former Yugoslavia are included in UNDP's calculations for the region they refer to as Eastern Europe/CIS.

[7] The Central Asia group should include Mongolia, which was invited to the September 1996 NARS Consultation in Tashkent. However, no representatives were able to participate, and there is very limited information available to the Task Force on agricultural research constraints and potential in Mongolia.

The range (and trends) of per capita GNP, importance of agriculture in the economy, arable land statistics, agricultural production and consumption values, etc. is shown for the individual countries of the regions in Tables 1-3 in annex III.

Table 1 above indicates that though Central and Eastern Europe as a group is wealthier and generally better off than the average for developing countries, it lags the industrialized countries, and the whole world, in terms of per capita income and purchasing power. Also, the per capital growth rate over the past decade and a half is negative.

In Central Asia/Caucasus on the other hand, GNP per capital is below even that of the developing countries as a group. Five of the Central Asia/Caucasus countries (and Albania and Macedonia) would qualify for IDA (or IDA blend) grants based on per capita GNP. World Bank[8] data indicates that from 1993 to 1994 per capita income declined by some 25% in Kazakhstan, Kyrghistan, Mongolia, and Tadjikistan, and by 31% in Azerbaijan.

Agricultural Indicators

The share of agriculture in the regions' economies - notably in Central Asia - is higher than the rest of the developing world (cf. Table 1). The agriculture potential in the regions is very significant, but presently yields and overall production levels are well behind those in other parts of the world. In Central Asia annual productivity is also extremely variable, partly due to the harsh climate and short growing seasons. Table 2 below provides recent data on cereal production and yields in selected regions and countries.

Table 2

Cereal Production and Yields, 1979-1981, 1991, and 1993

	Cereals' Yield (kg/ha)			Cereal Production (m MT)		
Region/Country	1979-81	1991	1993	1979-81	1991	1993
World	2195	2696	2741	1575	1877	1894
USA	4150	4513	4305	301	353	260
Argentina	2183	2662	2828	24	25	25
Australia	1321	1599	1941	21	19	29
Soviet Union	1314	1517		159	156	
Kazakhstan	1062	529	978	26.8	11.9	21.5
Kyrgyzstan	2456	2469	2501	1.4	1.4	1.6
Tadikistan	1300	1315	1062	0.3	0.3	0.3
Turkmenistan	2142	2165	2254	0.3	0.5	0.9
Uzbekistan	2210	1784	1769	2.6	1.9	2.1
Mongolia	573	970	917	0.3	0.6	0.5

source: FAO statistics (various years)

[8] From Plan to Market, World Development Report - 1996.

Because of the different physical environments in the regions (see annex III) it is not possible to generalize when discussing the agricultural sector. For example, whereas in the Russian Federation about 3% of the arable land is irrigated, the share in Uzbekistan is nearly 98%. Arable land (cropland) as a percentage of total land area is much higher in Central and Eastern Europe (with the exception of Russia) than it is in the arid Central Asian regions. Conversely, permanent pasture in Central Asia is very high - 70% in both Mongolia and Kazakhstan, which together account for 77% of the Central Asian land mass. The Caucasus countries are similar in these characteristics to Central/Eastern Europe.

Policy Issues/Environment

The collapse of the Soviet Union has had a major impact on agricultural production and trade in these regions. As the countries make the transition from a USSR-dominated centralized economy to national market-oriented economies, challenges arise, including:

- understanding the macroeconomic linkages between agriculture and other sectors;
- understanding how market signals and incentives work, and how these impact on the various subsectors (production, marketing, transport, etc.) of agriculture;
- reform towards establishment of private farms of various sizes.

These challenges manifest themselves in a number of dimensions, including:

1. for most of the countries, agricultural production especially in the livestock sector has decreased, as has calorie availability per capita[9];
2. food security has become an issue as countries attempt to diversify their agricultural economies, relying less on imports from former Soviet Republics, to increased diversification of crops produced domestically;
3. managing the shift from very large scale collective/state farm systems of production to smaller private farms raises issues of land use and land tenure, and agricultural employment. This is complicated by a general lack of appropriate equipment for smaller farms, and a lack of trained farmers capable of managing privatized farms;
4. there is a general lack of awareness about the need for sustainable use of natural resources, especially related to soil conservation, water management, and a systems approach to farm production;
5. national agricultural technology institutions and necessary linkages (research, extension, credit, marketing, farmers' organizations, etc.) must be developed from the fragments of those designed to serve the former Soviet system.

At the same time, the research and training efforts in these countries are generally not focused on problems relating to the development of new policies to deal with the process of transition in the agricultural sector. Where research capabilities exist, the emphasis tends to be on basic rather than applied research. A critical challenge for any expansion of CGIAR research in these countries would be the establishment of research priorities and management of the research enterprise, consistent with the changing economic and political environment.

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[9] Information on per capita calorie levels (from all foods) for 16 of the countries in CEE/FSU is available from FAO. Between 1993 and 1994, it declined in 10 countries by as much as 17% (in Moldova). It increased in the other six countries, but only marginally.

5. CGIAR ACTIVITY IN THE REGIONS

Introduction

One of the Task Force's first decisions was to attempt to develop a complete inventory of CGIAR activities in the two target regions, i.e. Central/Eastern Europe and Central Asia/Caucasus. This inventory is kept on an ISNAR database. A letter and questionnaire were sent to all Centers, and a first version of the resulting analysis of activity was included in the Task Force's interim report to the Group at MTM. Since then, several Centers have sent additional comments or supplied further information. The following synthesis is from the analysis of the Center questionnaire responses, for each region.

Of the 16 Centers, 10 have reported past, on-going and planned activities. The other 6 (CIFOR, ICLARM, ICRAF, IIMI, IITA and WARDA) have so far not been active in these two regions. Special mention is made here of IPGRI which to now has been the only CGIAR Center with an "official" mandate in this part of the world, with limited financial resources. Consequently, IPGRI has had and continues to support activities in the two regions. (Note: a detailed proposal was prepared for the Task Force by IPGRI, which is too voluminous for inclusion in this report. It is available directly from IPGRI[10]. The Task Force endorses the main thrusts of the proposal).

Central and Eastern Europe

Agreements - Several Central and Eastern European countries have signed the government agreement establishing IPGRI. Among them are The Czech Republic, Hungary, Poland, Romania, Russian Federation, Slovakia, and the Ukraine. IPGRI has also signed letters of agreement with the countries participating in the two following networks: European Programme for Crop Genetic Resources Networks (ECP/GR, involving 30 countries including Bulgaria, Croatia, Czech Republic, Hungary, Lithuania, Poland, Romania, Slovakia, F.R. Yugoslavia); and, the European Forest Genetic Resources Program (EUFORGEN involving 24 countries including Belarus, Croatia, The Czech Republic, Hungary, Latvia, Lithuania, Moldova, Poland, Slovakia, Ukraine).

The Russian Federation (and previously the ex-Soviet Union) is the country with which Centers have most official contacts and formal agreements: CIMMYT (Lenin Academy of Agricultural Sciences - Sept. 90), ICARDA (idem, Aug. 88; Vavilov All-Russian Scientific Research Institute - May 93 and Krasnodar Research Institute; South-Eastern Region Agricultural Research Institute, Saratovv - 1994) , ICRISAT (Vaskhnil - Apr. 90), IRRI (All-Russia Rice Research Institute - June 95). Bulgaria's Institute of Introduction and Plant Genetic Resources has agreements with both ICARDA (93) and IRRI (Dec. 95).

Finally, ICARDA has an agreement with Hungary (Research Center for Agro-botany - 89), IRRI with Romania (Research Institute for Cereals and Industrial Crops - Nov. 95), CIMMYT with Ukraine (Ukrainian Academy of Agricultural Sciences - May 91). CIP has signed two MOUs

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[10] *Strategy and Action Plan for the Conservation and Use of Plant Genetic Resources in Eastern Europe and the Newly Independent States of the former USSR, A Report developed by IPGRI for the CGIAR Eastern Europe/NIS Task Force,* Rome, June 1996.

with Czechoslovakia: Potato Breeding Station "Selekta Pakov (Nov. 93); and Institute of Potato Research in Havlickuv Brod (Nov. 93).

Missions - Annex IV summarizes the missions carried out by Center personnel in Central and Eastern Europe. Two trends are evident: IPGRI has had by far the greatest involvement in the region, with missions completed in almost all countries, and Russia has received CGIAR visits from more Centers than any other country. All visits in the region have occurred since 1991, most in 1994 and 1995.

Human Resources Development - Many Centers have been involved in human resources development through the organization of and active participation in training courses, workshops and meetings in the region, by supporting the participation of scientists from the region to international events and by hosting some visiting scientists in their Centers (CIMMYT, ICARDA and IPGRI have hosted visiting scientists).

IPGRI is the only center which has organized regular training events for scientists in the region. In addition, CIMMYT also organized technical workshops in Russia and Ukraine and two traveling seminars in collaboration with ICARDA.

The participation of scientists from the region to international events has been supported in one way or another by CIAT, CIMMYT, ICARDA, ICRISAT, IPGRI and IRRI. In 1992, ISNAR assisted EAAP (European Association for Animal Production), IVO-DLO (the Dutch research Institute for animal production) and FAO in organizing and conducting a workshop on "Research Strategy for Animal Production in Eastern & Central Europe in the 21st Century".

Linkages with Donor R&D Projects - The only two Centers which have benefited from special donor support are CIP and IPGRI. CIP is working in Poland on a project *"Breeding potatoes resistant to viruses"*. IPGRI is implementing the CGIAR Trust Fund for assistance to plant genetic resources programs in Eastern Europe and the former Soviet Union, within which funds from ODA, SIDA, UNDP, and USAID have so far been utilized to provide technical assistance in the Czech Republic, Hungary, Russia, and the Ukraine.

Collaborative Mechanisms/Networks - Five Centers have collaborative mechanisms (or networks) in place with countries from Eastern and Central Europe: CIAT in Bulgaria for germplasm exchange; CIP with a contract in Poland (Potato Research Institute/Research Center for Genetics, Breeding and Virology/Mlochow) for "Breeding Potatoes Resistant to Viruses"; ICARDA for distribution of germplasm throughout Eastern Europe, especially barley but also lentils, faba bean, and kabuli chickpea (all or some of the preceding to Bulgaria, Czech Republic, Hungary, Lithuania, Romania, Russia, and Slovakia); IFPRI with Russia for the development of a computable general equilibrium model of the Russian economy; and, IPGRI with its two networking Programmes (ECP/GR and EUFORGEN). IPGRI is organizing a subregional workshop on crop and forest genetic resources in Tashkent, 28-30 October, 1996.

Central Asia and Caucasus

Agreements - ICARDA was the first CGIAR Center to develop a formal relationship with the five Central Asian countries (Kazakstan, Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan). A multi-county agreement was signed in December 1995, in order to facilitate activities in that region. Bilateral agreements between those countries and ICARDA are

expected also to be signed in due course. CIMMYT has also signed an agreement with Uzbekistan, which would encompass in due course projects on wheat improvement and human resource development.

Missions - Six Centers have carried out missions in these countries, with the most frequent being ICARDA. In addition (and not counting center participation in the recent Tashkent NARS Consultation), CIMMYT, ICRISAT, IFPRI (details not available), IPGRI, and ISNAR staff have undertaken visits within the region. Except for the ICRISAT visit to Uzbekistan in 1991, all Center missions in this region have occurred since 1994. Annex V has details of the pattern of visits.

Human Resource Development - Only a small number of CGIAR Centers have so far been involved, and must continue to be active, in training in Central Asia/Caucasus. NARS scientists have been invited to workshops, meetings, and seminars/international conferences, and several have also been visiting scientists at CGIAR Centers.

In *Central Asia*, opportunities for scientific interaction and information exchange were provided through participation in a Turkey/ICARDA Workshop on Agricultural Research and Education in the Turkish Republics (Ankara, 1992), and the 5th International Wheat Conference organized by Turkey/CIMMYT/ICARDA/OSU/GTZ (Ankara, June 1966). NARS scientists also participated in the 1995 ICARDA/GTZ workshop in Tashkent (the following section provides additional detail on this critically important meeting). Finally, the "Livestock Assessment Workshop" in February 1996, also in Tashkent and supported by ICARDA/SR-CRSP, was an opportunity for NARS scientists to develop CGIAR contacts.

In the *Caucasus* countries, there have been fewer opportunities for human resource development. Participation in the aforementioned Wheat Conference, and in ICARDA's December 1995 Tashkent workshop, have been the primary contacts. ICARDA hosted a study tour for an Armenian scientist as well.

Germplasm Exchange - There was limited exchange of germplasm until 1995, when ICARDA and CIMMYT started to provide wheat germplasm in the region. ICARDA has also provided improved varieties of barley, chickpea, and vetches. A germplasm collection mission was carried out by ICARDA in Armenia, in 1992. Both CIMMYT and ICARDA have received germplasm from the region, for testing.

Linkages with Donor R&D Projects - ICARDA received support from GTZ, to organize the 1995 Tashkent workshop. Both ICARDA and CIMMYT have developed linkages (since 1995) with the TACIS-Cereals project in Turkmenistan and Kyrgyzstan, and with the Agha Khan Foundation in Tajikistan. ICARDA is now in the process of developing links with the FAO Regional Office in Cairo, to jointly plan and organize human resource development activities in the region.

Collaborative Mechanisms/Networks - The 1995 ICARDA agreement provides an avenue for carrying out regional activities, through the ICARDA Highland Regional Program office in Ankara. The exchange of improved barley, durum wheat, and food/feed legumes is handled through ICARDA's Ankara office. Improved wheat germplasm is distributed through the joint Turkey/CIMMYT/ICARDA International Facultative Wheat Program.

6. Constraints/Opportunities, Priorities, & Potential Involvement

Introduction

Information, advice, and other sources of material which contribute to this section were received and used in a variety of ways. As described earlier, the Task Force requested that centers provide their perceived needs of the region and assessment of project opportunities in the future. The strategy and action plan prepared by IPGRI for the Task Force is based on the international preparatory process for the FAO Conference on PGR held in June 1996 in Leipzig, Germany. An in-depth review was carried out of World Bank activity, and discussions were held with FAO staff.

Importantly, as well, consultations with NARS leaders and planners in all regions were carried out. The December 1995 NARS meeting[11] organized in Tashkent by ICARDA provided timely and important information. The summary proceedings of that workshop are now available, and highlights of the proceedings are provided in annex V.

All country representatives attending the Task Force/CGIAR 1996 NARS Consultations (in Prague and Tashkent) were required to prepare and present an overview of the agricultural research system in their country, and to describe constraints to research as well as their assessment of national research priorities. In the second day of each workshop, working groups were organized to summarize the regional information, and to prepare an assessment of regional needs, constraints at different levels (organizational, financial, material, etc.), research potential, and recommendations for CGIAR involvement. The material in the following section largely derives from these Consultations.[12] As noted earlier, preparation of all the meeting proceedings is under way, and they will be available at a later date.

Central and Eastern Europe

While the Russian Federation is included in a sub-region along with the Ukraine, Belarus, and Moldova, its size overshadows in many ways the remainder of the region, in terms of potential and scale of the organizational problems faced at the national research level. The Task Force notes that there are significant efforts underway from the World Bank (which has in the past requested and received CGIAR Center participation in project development missions to Russia) and other organizations to assist Russia, and there may be less comparative advantage enjoyed by the CGIAR than would be the case in Eastern Europe and Central Asian countries. The Task Force feels that Centers could respond to specific opportunities in the next several years in Russia, but that a more ambitious approach to project development may not be optimal or even feasible, in the absence of a more developed CGIAR strategy for the Russian Federation and, in fact, for this region as a whole. Thus, the following description of constraints, opportunities, priorities, and CGIAR potential is focused mainly on countries in Central and

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[11] *Assessment of Research and Seed Production Needs in Dryland Agriculture in the West and Central Asian Republics. Summary Proceedings of Workshop*, Tashkent, 5-9 December 1995. ICARDA/GTZ/Uzbekistan Academy of Agricultural Sciences.

[12] Many of the priorities described in this section result from highlights of the NARS representatives presentations and working group summaries. However, as the summary proceedings have not yet been finalized, they have not been reviewed with the NARS representatives, in the form they are described here.

Eastern Europe, other than the Russian Federation. (Note: while a comprehensive project-development approach by CGIAR Centers for the Russian Federation is not recommended at this time, the Task Force does believe that the CGIAR Centers should certainly include this vast country in its activity levels 1 and 2, i.e. information-sharing and access to genetic resource material/germplasm).

Constraints and Opportunities

Agricultural research systems in Eastern and Central Europe are faced with a very broad range of challenges related to the modernization and required refocusing of agricultural research. While many problems facing the NARS are common, there are significant differences between different groups of countries in this large region. Some countries have been independent only for a few years and thus require a complete restructuring and reorientation of their research systems, while others have been independent but linked strongly within the Soviet Bloc in the past, and so may require significant but less dramatic organizational change and establishment of new linkages in the international community.

There are several new countries recently created, and others in the process of being created, in Central Europe. Clearly, a major structural-design exercise will need to be carried out to determine what kind of national agricultural research system and regional cooperation is appropriate and feasible in these states.

Specific areas where constraints exist but where there are also opportunities include:

Policies and Programs

Research policies for the Baltic States and Eastern Europe countries were until 1991 determined largely by central institutions in Moscow. In parts of Central Europe some policies were developed more independently, however regional linkages were perhaps of necessity stronger than they are at present. Information and access to modern planning techniques in all regions has been largely unavailable. In common with many other regions, there is a widespread lack of commitment to and financing for agricultural research.

But, in spite of the past, an opportunity exists at this relatively early stage of re-development for better and certainly more relevant research planning, precisely since there is somewhat of a "clean sheet" situation. Partnerships and linkages with international institutions are now much more feasible, and this presents attractive options for planners in the regions.

Organization

The organization of agricultural research differs in the sub-regions. There is a broader base of institutions (government organizations, academies of science, universities, and now the private sector) which can contribute to a national effort in Central Europe and the Baltic States, than is the case in parts of Eastern Europe. The past history of central planning, however, mitigated against effective coordination of effort, which must be overcome to maximize potential output, with declining financial resources from national treasuries. The opportunity is to assist in the integration of different sources of knowledge and expertise towards solution of national problems through strengthened NARS.

Resources

1. *Information resources* are limited, and countries have only recent access to the international community. The problems are evident at numerous levels: inadequate scientific literature availability, the need for language training, etc. However, there are obvious and relatively inexpensive corrective measures which can change this.

2. *Human resources* are severely constrained everywhere - not necessarily in numbers and skills, but for sustained and meaningful use of skills in deteriorating conditions. This has led to a "correction" or downsizing, which will force better utilization of scientific expertise (an opportunity for rationalization of effort: In some instances this has been controlled, and in others it has occurred because staff have simply left because salaries were too low or not paid at all. In some cases those who have left are the more qualified and mobile staff). In many countries these reductions have been very significant, notably in the Ukraine and in Russia. In some countries of the region (Albania, for example) scientific expertise is much more limited than in others, and in such cases a reduction in force may be necessary for financial reasons, but clearly not desirable. Here the constraint is in finding access to advanced training and exposure to outside expertise.

   Many countries in this region may benefit from expanded CGIAR contract activity, since there are well-trained scientists who are clearly "under-employed" in many locations. This could be most appropriate in areas where site-specificity or shared commodity research is not a major requirement, such as in biotechnology, GIS, etc. Such a development may represent a "win-win" situation, as the CGIAR would also benefit from lower-cost research.

   The problem of weakening the human resource base, not only by resignation of qualified existing staff, but also by the lack of interest of the younger generation, endangers the future. It can be overcome through policy changes stimulated by donors working with the national leadership.

3. *Financial resources:* provision of operating funds as well as for equipment and maintenance of infrastructure is under severe pressure, leading to a breakdown in functioning of laboratories and institutes. It is hard to see an opportunity in this regard except, perhaps, that it will provide an early test of the effectiveness of revised planning structures, since a key function of any new policy development will be to optimize use of financial resources: closing some institutions and strengthening and if necessary re-building others. There may not be much in the way of desired assistance (from the perspective of NARS leaders in both 1996 NARS Consultations) that the CGIAR can do to ameliorate this situation, except, where appropriate, to assist NARS in identifying potential sources of external technical and financial assistance, and to encourage more efficient use of existing resources.

   In many instances, countries in these regions exhibit a classic resource allocation problem: a disproportionately high percentage of very limited financing goes to pay salaries and upkeep (including heating), while operational research funding continues to decline. Rationalization of personnel structures, while difficult, will allow for greater investment for other operating, as long as "savings" realized from reduced payrolls are not allocated elsewhere within national budgets.

The CGIAR might play a new role not so much in actively supporting the change itself but helping to create public and political awareness of the problem.

Research Priorities

As is the case in some other regions, there is little experience and capacity for priority-setting in Central/Eastern Europe. However, attempts were made in the Prague workshop to define the major priorities - apart from organizational issues as described above - as seen from the perspective of the representatives (largely from government Ministries of Agriculture) in the region. The following general themes emerged from the working group on this topic:

1. The highest priority identified by most of the NARS leaders was for information, training, and regional networking;

2. Natural resource management received a very high ranking in the Consultation, however this was mostly in areas where there is little or no CGIAR comparative advantage. A good example is the degradation and long-term soil pollution, resulting from the Chernobyl disaster. The shrinking of the Aral Sea was another example. Development of very large river basins (e.g. the Danube) in Central Europe also received attention, but this would require (mainly) vast financial investment and technical assistance.

3. Mechanization and development/improvement of agro-industries received high priority, partly reflecting the relatively advanced economies and consumer requirements for agricultural products in (especially) Central Europe and the Baltic States.

4. Continued collaboration in conserving genetic resources received high priority, since there has been an ongoing activity with IPGRI, and the level of familiarity and understanding of the CGIAR role in this area was relatively high.

5. There was some expressed research need in several CGIAR mandate commodities in many countries. This includes notably temperate cereals research (mainly in Eastern Europe), potato production in numerous locations, and livestock forage and feed (barley). Assistance for development of sustainable agriculture in mountainous areas was expressed by representatives of several Eastern European countries.

6. Economic policy research related to the agricultural sector was recognized as a priority; in Central Europe this was related to developments as countries integrate into common markets, etc.

Potential CGIAR Involvement

Neither the CGIAR nor Centers' governance previously encouraged activity in Eastern Europe. Most Centers also lacked financial resources for additional efforts. Except for IPGRI's program, and a few other instances of Center collaboration, therefore, there has not been much CGIAR activity in Central/Eastern Europe. Also, in some countries the relative prosperity means that the poverty criterion for CGIAR involvement would not have been satisfied. In other areas, closed structures until very recently basically precluded serious and sustained efforts at collaboration.

Nevertheless, there are several things that the CGIAR can do in the future to assist the countries of this region. These need not be the more expensive and "traditional" Center collaborative programs - although some of these - notably with ISNAR, and with other Centers as part of a regional network - should be developed as well. The following areas appear to offer potential for CGIAR involvement:

- Organization and Planning Service: assistance in designing research structures linking all national partners in agricultural research planning and management. This (ISNAR) activity can be facilitated in collaboration with a Regional Forum of NARS leaders, which should be created as a follow-up to the NARS Consultation in Prague. It is possible that IFPRI also may have a special role to assist in food policy-related studies to provide needed data for decision-making and policy development purposes.

- Literature Service: all relevant Centers can provide information materials and linkages to NARS in the regions, at very low cost. NARS leaders should be put on mailing lists for center publications.

- Genetic Resources Exchange and Conservation: continuation and expansion of germplasm exchanges where relevant. This can be done on a bilateral (Center to NARS) basis when necessary, or through an international network when possible. The lead Center would be IPGRI, with other commodity Centers collaborating as appropriate (for example, IRRI is including several Eastern European countries in their INGER network for the regions, just getting underway).

- Regional Information Service: All countries can benefit from better regional collaboration and information-sharing. Project databases could be developed which could help eliminate costly duplicative research activity. This could be developed through the Regional Forum, with assistance from the CGIAR if funding can be identified. A related activity in this regard would be provision to NARS of information on research consortia, expertise, and activity in other parts of the world. In some cases, the CGIAR could act as a "matchmaker" between NARS and collaborative partners and potential donors elsewhere. ISNAR could take the lead here, with other Centers becoming involved as needs arise.

- Contract Research: at least some of the national research institutes of many NARS in the region still have the potential for contract research of high quality at low cost, which should be attractive to CGIAR Centers. The constraint here might be in identifying such sources of expertise, however it is likely that CGIAR specialists are familiar with work carried out, even in the former Soviet Bloc. At least one Center has announced plans to pursue this avenue: CIP intends to collaborate with researchers in Poland, Hungary, and Russia, for the CIP Late Blight program.

- Training Support Service: Except for IPGRI's activities, in-service training has almost not taken place at all in the regions. The CGIAR could invite scientists from this region to participate in Center conferences, seminars, workshops, and training course, on relevant topics and technologies. In addition and where necessary, senior scientists from the region could be invited as visiting scientist/fellows at Centers, to spend several weeks or months, to become better acquainted with the CGIAR and to establish counterpart collaborating institutions for joint CGIAR/NARS work.

Central Asia/Caucasus

Agricultural research in the former Soviet Republics of Central Asia and the Caucasus was previously organized centrally by the Soviet Union to respond to the needs for agricultural commodities, again centrally-planned and designated for each Republic. With their emergence as independent countries in 1991, each country has begun to restructure its agriculture and the institutions that serve agriculture to meet **national** goals and needs. Based on information provided by Centers about their limited involvement in these countries, and the two CGIAR consultations in the region (ICARDA's in 1995 and the Task Force's in 1996), the following summary comments can be made. These NARS Consultations provided the Task Force (directly in the case of 1996) with very useful information and confirmed the need and opportunities for the CGIAR in this region.

Constraints and Opportunities

The major constraints for agricultural research relate to policies, organization and structure, financial resources, linkages with users, access to information and materials, and the restructuring of agriculture itself. Opportunities relate to the presence of well trained (but often out-of-date) scientists, a changing research agenda based on transition to a market economy, possibilities for the exchange of information and materials, high potential for success in research and benefits from regional and international research activities, and finally governments' desire to improve the performance of the agricultural sector. These conclusions come from the output from a regional Working Group discussing *Research Policy, Organization and Management* at the 1996 CGIAR NARS consultation in Tashkent. More details follow.

Policies - Research policies in the countries of the region are still largely based on the previous centrally planned systems. Generally, the policies are not well formulated and reflect the realities of the past. Nevertheless, a will exists to support the achieved political independence by an economic and scientific self sufficiency. A number of countries have begun to reformulate their agricultural policies to provide more adequate support to emerging, market oriented farming systems. Partnerships could be established between Centers and National Programs to raise awareness of policy makers about the importance of agricultural research.

Organization - Several institutions deal with agricultural research in each country. These include Academies of Science, Academies of Agricultural Science, Ministries of Agriculture and Ministries of Education (through universities). The level of coordination and linkages between these varies, but only few countries have established formal coordinating mechanisms. Linkages to users is now very poor. It must be noted that in general the Academies of Sciences in the region not only deal more than others with strategic research, their prestige and influence is higher than that of most Academies of Agricultural Sciences, the latter being linked more closely to the Ministries of Agriculture.

Program management - Program planning and management was very much top-down in the past. In addition, agricultural research institutions are often by nature conservative. Efforts are being made in a few countries to restructure the management systems to be more sensitive to the market constraints faced by farmers. This is an area needing to be addressed by national programs. Inter alia, better management and planning of research activities will facilitate interaction with Centers.

Resource management - The management of human, physical, financial and information resources was discussed by the working group participants, with the following conclusions:

a) Human resources - All countries recognize a current lack of interest by young and talented post-graduates to become involved in agricultural research. Highly qualified staff are leaving agricultural research in favor of the private sector or to emigrate from the country. Lack of contact with the international scientific community has caused a technology lag and has prevented scientists from keeping abreast of current science. A need for training in modern scientific methods, languages and computer sciences is recognized. There is a critical need for English language training to improve access to current scientific literature and to improve possibilities for collaborative research. In addition, efficiency in the use of human resources needs to be increased.

b) Physical facilities - These need upgrading urgently. Modern equipment needs to be purchased in order to make research more efficient.

c) Financial resources - Public funding is still essentially the only source of revenue for scientific institutions, but it is extremely limited. Consequently, funds are distributed through research contracts leaving little or no support to upgrade facilities. Salaries are very low while other costs, like energy, consume a very high percentage of research budgets. Very few individual institutes have managed to obtain some funding through foreign grants and international collaboration.

Financing for agricultural research is not only a management issue, but also a major policy issue for these countries. At the moment funding is not sufficient even to conserve valuable genetic resource material already collected, let alone to enlarge collections. This is in sharp contrast to CGIAR policies, and more funding in this area is urgently needed.

d) Information resources - Linkages need to be developed at all levels. Information to users (producers and other) is very poor and this effects the impact of research. This is to some extent due to the financial constraints and the transition issues (previously state and cooperative farm specialists carried out these tasks). Science based information for users is deficient since farm advisory services still need to be established in a number of countries. The need for improved information linkages with Centers and the external scientific community, including within the region itself, was emphasized and this requires improved language capability.

Regional Collaboration. - Regional collaboration has been reduced considerably since the collapse of the USSR due to lack of funds and coordination mechanisms. There is a strong need to reestablish regional information exchange and collaboration. This would facilitate interaction with Centers.

Conclusions - The Working Group participants:

* expressed an urgent need to re-establish previous regional linkages;
* expressed interest in a regional workshop on research policy, organization and management;

* requested a better access to information generated by the Centers as well as by the broader research community;
* requested Centers to intensify training activities in the region, including languages;
* requested Centers to intensify scientific exchange with relevant institutions; and,
* requested support for regional cooperation and for projects with Centers through which complementarity in research between the countries of the region can be enhanced.

Research Priorities

There is currently little capacity for priority setting in the research systems due to lack of experience, the discontinuities of the transition period, and the inadequate coordination between the ministries, academies and other entities involved in agricultural research. At both the Tashkent consultations (1995 and 1996), agricultural research leaders from the countries were asked to give an indication of their national priority program areas. At the 1996 meeting, a TAC representative provided information on the CGIAR Research Agenda and criteria for priority setting within the CGIAR system. The following is a summary of the output from the special Working Group on *Research Priorities: Needs and Opportunities* (1996 CGIAR NARS consultation in Tashkent).

The working group, composed primarily of representatives from the Academies of Agricultural Sciences of the countries and some CGIAR Center representatives, defined 6 broad research areas and prioritized them in the following order: 1. Crop Improvement; 2. Policy and Institutional Development; 3. Resource Management; 4. Livestock Improvement; 5. Capacity Building; and, 6. Rangeland Management. Within each of these broad areas, country representatives then indicated their priorities.

For crops, cereals and forages ranked highest. Crop activity given high priority included seed production and breeding. For policy and institutional development, the group ranked research finance, research policy, and research management in that order. Resource management issues were ranked by most countries in the following order: soils, water and biodiversity. Soil fertility and irrigated lands were given highest priority, and there was expressed a need for both in-situ and ex-situ conservation. For livestock, cattle ranker higher than small ruminants. Livestock research activities were prioritized as feeding, breeding and health. Capacity-building dealt with a range of issues with widely varying degrees of importance assigned by different countries. They included: specialized training, language training, participation in international meetings, degree training, communications and library facilities. For rangeland research, priority was rather evenly split between rehabilitation and management.

More details on country priorities are provided in the country reports for both the 1995 and 1996 regional consultations, and will be fully reflected in the workshop proceedings. The above is a summary of needs aggregated to the regional level and may indicate opportunities for regional activities. Each country has its own set of priorities, however, and research programs in those countries need to respond directly to them.

Potential CGIAR Involvement

Several IARCs have already begun to work with countries in the region, most notably ICARDA, CIMMYT and IPGRI. (A summary of *current* IARC activities was described earlier). All activities address priority needs, but other program areas are of critical importance as well.

Most CGIAR Centers can contribute to the research needs of the region and would find willing and competent partners among the researchers and research institutions of these countries. As previously discussed, five levels of collaboration representing different levels of intensity are possible, and it will be up to each Center and the country to define the levels which are needed for each program area and priority.

A number of centers have proposed comprehensive programs in Central Asia. Most notable is ICARDA. Based on the 1995 Tashkent workshop discussions, ICARDA has submitted a large scale proposal to the German Government for *"A Collaborative Research Program for the Development of Sustainable Agricultural Production in the Central Asian Republics."* The project would also involve CIMMYT, IPGRI, IFPRI, ISNAR and Turkey. IPGRI continues with extensive activities in the region on genetic resources and has high potential for intensification of its program activities.

The following are some priority areas for the CGIAR in the region, including some examples of existing and planned (or tentative) Center activities which are consistent with the CGIAR mandate. Annex VI provides a short project description for each of several activities which have been developed to the proposal stage, including financial resource requirements. The Task Force considers these to be of high priority, and appropriate for CGIAR support. It should also be noted, however, that many countries expressed interest in topics not within the CGIAR mandate, such as cotton, tobacco, fruits, and vegetables, and the Task Force does not recommend an expansion of the CGIAR Research Agenda to include such activity.

a) Research Policy, Organization and Management

One of the primary areas where the CGIAR can assist in responding to a priority need in most countries of the region is for **research policy, institutional development, organization and management**. Most countries are currently building their systems out of the fragments of institutions that served the former Soviet Union. Many key policy issues (for example: institutional mandates), and the funding of agricultural research have not been fully addressed. As a consequence, it is difficult for these countries to manage research resources effectively and efficiently and to make key priority decisions. The countries and many donors are aware of the need for this type of assistance to improve the functioning of country research programs, as well as to build the basis for effective regional programs and collaboration with Centers. ISNAR and possibly IFPRI (food policy research) are needed early to facilitate this process of institutional change/transition to coincide with economic transition and structural change in agriculture.

Examples of current, planned or potential Center activities are:

- ISNAR has submitted a proposal to the Dutch Government for a study on "The evolution of the organization of agricultural research in Central and West Asia", and has also offered to conduct a regional workshop (subject to funding availability) on *Research Policy, Organization and Management* in the region.

- IFPRI has proposed an activity to strengthen the capacity of countries for food policy research and has been discussing policy issues with leaders in Uzbekistan and Kyrgyz Republic.

b) Basic Food Commodities

There is high potential for Center collaboration in the area of **basic food commodities** like wheat and potatoes. Data from FAO show a significant decline (5% to 20 % from 1992 to 1994) in per capita calorie levels in each of the countries in the region giving rise for concern about food security and distribution. While the focus remains on irrigated areas, there is a rising need to focus on rainfed areas and to extend the crops to up-lands where emerging small farmers need assistance. ICARDA, CIMMYT, CIP, IRRI and others can make a major impact in the area of basic food production.

Examples of current, planned or potential IARC activities are:

- ICARDA has several activities in crop improvement underway and has the most significant potential for sustained programs in the region (see above and annex VI on the project proposal for the region).

- CIMMYT and ICARDA have jointly conducted training workshops and exchanged scientists within the region through their offices in Turkey. They have provided a facultative and winter wheat observation nursery to several countries.

- CIMMYT has developed scientific linkages with Central Asian and Caucasus countries also. A pre-proposal was recently prepared by CIMMYT on "wheat germplasm development for Central Asia/Caucasus."

- IPGRI has a wide range of activities in the region which have high potential for the future.

- IRRI has proposed to extend its INGER program to parts of the region, and is seeking additional funds for exchange and evaluation of germplasm, genotype x environment interaction studies, training, and manpower development, and institutional linkages.

- ICRISAT has some activities related to sorghum germplasm with Uzbekistan which could be expanded to other countries in the region.

c) Soil and Water Management

Another high potential area is **soil and water management**. This is becoming more acute with the emergence of smaller farmers with different needs from those of the former State farms and cooperatives. Fertility management and water conservation practices are key concerns. Irrigation system management will become a critical issue in the future when water must be delivered to private farmers unable to maintain large water systems. Environmental issues associated with agriculture are becoming more evident and require attention. ICARDA, CIMMYT, IIMI, ICRISAT and others would find opportunities for collaborative research in this area.

Examples of potential Center activity are:

- ICARDA has identified potential activities in Central Asia's dryland areas, for on-farm water resource efficiency, and issues related to soil management.

- IIMI has high potential for activities in Central Asia due to the heavy dependence on irrigation, declining systems' efficiency and the emergence of private farms.

d) Highland Agriculture

Agriculture in the mountainous regions, especially pasture management, is a high potential area for the future of the region. Traditional systems are returning and there is considerable interest in focusing on this fragile resource base which is widespread in the region. The agenda ranges from pasture management to livestock nutrition to a broad range of ecological issues. ICRAF, ICARDA, ILRI and perhaps others could be of considerable assistance here.

Examples of current, planned or potential Center activities are:

- ICARDA has a joint proposal with the Small Ruminants CRSP on livestock needs, focusing on upland pastures and small ruminant management.

- ILRI could enlarge its pastures development network to include these countries, but has no plans at present.

- ICRAF may be helpful as small farmers seek to cultivate the upland areas, but the Task Force is not aware of any plans at present. Also, the CGIAR mountain agriculture initiative involving CIP and ICRAF, and possibly ICIMOD, might be of relevance here.

e) Research Support

As mentioned in previous sections, **research support** is needed in the region, particularly in this transition period. All centers can assist in several of the following areas: information and materials exchange, training, staff exchanges, invitations to scientific meetings, priority setting, program evaluations. The extensive activities of IPGRI highlight the potential for relatively low cost support that can be highly effective.

Several Centers have been providing research support as indicated above. The Task Force recommends increased activity in this area since there are mutual benefits to be gained and effective assistance can be provided at relatively low cost. Projects developed for the region need to include these activities to ensure the sustained development of the countries' research systems.

Finally, there is a very basic and evident requirement for most scientists in Central Asia/Caucasus. This is for language training, most notably English. Inability to communicate easily with researchers in the international community, and to publish and use scientific reports, will be a serious limiting factor for many years, if there is not a significant language program available. While the CGIAR is not the obvious provider of such a program, it should be possible to link with other sources which are specialized in this field. The Task Force believes that immediate attention should be devoted to this, with funding for it provided by non-traditional CGIAR sources.

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Annex I

CGIAR Task Force on Eastern/Central Europe and former Soviet Union

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Annex II

Agricultural Knowledge Systems in the Transitioning Economies
A Survey of World Bank Experiences

Jitendra P. Srivastava and Christina Reinhard

(highlights of a report prepared for the Task Force)

The CGIAR Task Force on Central/Eastern Europe/former Soviet Union requested the Agriculture Department of the World Bank (AGR) to prepare a desk review of the World Bank's (WB) experience and recommendations for improving agricultural research and training in the Europe and Central Asia (ECA) region. Information was obtained primarily through WB agriculture sector studies, working papers, project documents, and the knowledge and insights of WB task managers.

The review summarizes the importance of agricultural research and extension to the Transitioning economies. It identifies the broad regional trends which have become apparent in these areas. Finally, it provides an inventory of relevant WB experience in: Albania, Armenia, Azerbaijan, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Romania, Russian Federation, Slovak Republic, Slovenia, Federal Republic of Yugoslavia (Serbia), Tajikistan, Turkmenistan, Ukraine, and Uzebekistan. The study categorized countries into four groups according to their progress in economic transition and the effectiveness of their agriculture knowledge systems (also called a 'national agricultural research system (NARS)').

In some countries, such as Poland and Hungary, agriculture sectors have been somewhat market and export-oriented since the mid to late 1980's. Here, the WB has been involved in agricultural research and extension largely through the support and/or provision of services to new private agricultural enterprises, to assist them in qualifying for WB loans. Some examples of these services are business planning and product marketing strategies.

In other countries, such as Latvia and Lithuania, where economies and institutions require more substantial policy reform and restructuring, the WB provides institution-building support for agricultural ministries and other organizations responsible for providing public sector support services. In countries such as Kazakhstan and Azerbaijan, whose economies face the greatest fiscal constraints, especially those where lending has only recently commenced, the WB is concentrating on policy and structural adjustments, irrigation, and other broad areas, and will explore research, education, and extension needs subsequent to these efforts.

In Russia, the WB has given recent attention to the agriculture knowledge system. In addition to a review of the Russian research and extension system, the Bank is engaged in a number of activities which strengthen public and private capabilities within the context of other agriculture projects.

In all twenty-six countries, agriculture is a major contributor to the economy. Its contribution to GDP ranges from 14 to 30 percent. While conditions vary in each country, agriculture knowledge systems in the ECA have the following general characteristics: emphasis on basic science over applied research; emphasis on output quotas over efficient production; large production units; high quality scientists and research; lack of 'client orientation'; professional isolation; public sector dominance; financial unsustainability; and crisis management. One WB study found that for all ECA countries surveyed, 'institutional weaknesses particularly regarding organization of agricultural support services' were among the top five constraints for 'instituting sustainable, market-based agricultural development.'

Agricultural research and extension are important components of the national agricultural knowledge system, and are necessary in creating a competitive and efficient agriculture sector. They contribute to the competitiveness of agriculture by reducing unit production costs; improving product quality or creating unique product characteristics; reducing environmental damage or other external costs; adding value to basic commodities; developing primary production technologies which are not easily transferred to competitors, and; developing utilization technologies that add value to or enhance demand for agricultural products.

Thus, the agricultural knowledge system has an important role in the agriculture sectors of Eastern Europe and the former Soviet Union (FSU). If these countries are underinvesting, or investing in inappropriate agricultural research and support services, they are in danger not only of spending scarce resources inefficiently, but also of missing an important opportunity to increase the competitiveness and productivity of their rural agricultural sectors.

An agriculture knowledge system should be a public investment. Reduced food costs, reallocation of physical and human capital to higher value uses, or increased economic activity, such as trade, are some of the returns to investment. Economic analysis shows high ROI for agricultural research in many countries, and the current inefficiencies in the economies of Eastern Europe and the FSU imply even greater potential returns in those countries. Thus, agricultural research should be viewed as a key component in a strategy for ECA countries to become efficient and competitive in domestic and international markets.

In the future, in addition to commodity production, agricultural knowledge systems in ECA countries should emphasize production efficiency, product quality, and value-added and environmentally-sound technologies. Instead of a sole emphasis on self-sufficiency in food production, agricultural economies - and the research which leads them - should focus on areas of comparative advantage and on joining international markets. Where it is more efficient, the private sector should provide support services. Finally, the training and expertise of scientists and technicians should reflect these new priorities. The final structure of these new systems cannot be prescribed and will not be static. Their main characteristic will be adaptability, and they will be one of the countries' most important tools for adapting to changing markets and future conditions.

In order for the countries of Eastern Europe and the FSU to achieve the goals described above, they must transform their existing public systems and redirect resources already invested. To some degree, they must all undertake the following difficult actions:

- Increase efficiency - rightsize staff, eliminate duplicative efforts, reduce bureaucracies, integrate institutions, and privatize whenever possible.
- Commit resources based on anticipated, applied outcomes and performance.
- Become client-oriented and demand-driven.
- Develop more efficient dissemination mechanisms to implement research results at the farm and factory level.
- Improve linkages between research, higher education, and extension.
- Decentralize management authority in research, education, and extension.
- Diversify funding sources.
- Balance emphasis on basic science and applied, multidisciplinary research.
- Give more attention to small, private farms.
- End professional isolation - pursue national and international linkages.
- Encourage induction of young scientists.

These activities will lead to agricultural knowledge systems which are financially sustainable, effective in producing high-quality research and impacting the agricultural sector; effective in supporting efficient agricultural activities; and effective in producing scientists and technicians who have relevant skills.

While painful, these adjustments are preferable to the alternative: continuation of current policies will likely lead to the disintegration of agricultural research capabilities in these countries. Budgets which are already insufficient to support the current system promise to further tighten. This will endanger the upkeep of facilities and equipment, and further contract capabilities to provide research, extension, and education. The scientific community will face not only the short-term loss of its human resources to more lucrative activities but also a potential long-term decrease in new entrants to the profession.

WB agricultural experts postulate serious impacts on the agriculture sector which could result from the disintegration of agricultural knowledge systems in the ECA. For example, cancellation of diagnostic services and genetic research could decrease a country's ability to respond to epidemics or to decreases in output or quality. Second, a delay or cancellation of research in product development could preclude ECA countries from meeting new quality and market standards and joining EC or other international markets in the near future. Third, cancellation of research in farming systems, especially in mechanization technologies and livestock production for small-scale operations, could seriously handicap the growth of the sector.

Table 1 - Human Indicators

1.1 Europe

1.1.1 Eastern Europe	Est. Pop. (millions) 1993	Pop. Growth (% per year) 1960-1993	Pop. Density (persons/ha) 1993	Labor Force in Agr (%) 1990	Human Dev Index 1993
Russian Federation	147.8	0.6	0.1	14	0.804
Ukraine	51.6	0.6	0.8	20	0.719
Belarus	10.2	0.7	0.5	20	0.787
Moldova	4.4	1.2	1.3	33	0.663
1.1.2 Baltic States					
Estonia	1.6	0.7	0.4	14	0.749
Latvia	2.6	0.6	0.4	16	0.820
Lithuania	3.7	0.9	0.6	18	0.719
1.1.3 Central Europe					
Albania	3.4	2.3	1.2	55	0.633
Bosnia/Herz.					
Bulgaria	8.9	0.4	0.8	13	0.773
Croatia					
Czech Republic	10.3	0.2	1.3	11	0.872
Hungary	10.2	0.1	1.1	15	0.855
Macedonia					
Poland	38.3	0.8	1.2	27	0.819
Romania	23.0	0.7	1.0	24	0.738
Slovakia	5.3	0.8	1.1	12	0.864
Slovenia					
Yugoslavia					

1.2 Asia

1.2.1 Central Asia	Est. Pop. (millions) 1993	Pop. Growth (% per year) 1960-1993	Pop. Density (persons/ha) 1993	Labor Force in Agr. (%) 1990	Human Dev Index 1993
Kazakhstan	17.0	1.6	0.06	22	0.740
Kyrgyzstan	4.6	2.3	0.23	32	0.663
Mongolia	2.3	2.7	0.01	32	0.578
Tajikistan	5.8	3.1	0.41	41	0.616
Turkmenistan	3.9	2.8	0.08	37	0.695
Uzbekistan	21.9	2.9	0.49	35	0.679
1.2.2 West Asia					
Armenia	3.5	1.9	1.17	18	0.680
Azerbaijan	7.4	2.0	0.85	31	0.665
Georgia	5.4	0.8	0.77	26	0.645

Source: UNDP Human Development Report 1996

Table 2 : Physical Indicators

2.1 Europe

2.1.1 Eastern Europe	Total Land Area (000 ha) 1993	Arable Land (000 ha) 1993	Arable Land (% of total) 1993	Arable Land/Person (ha) 1993	Irrigated Land (% of arable) 1993
Russian Federation	1,707,540	129,773	7.6	0.9	3.1
Ukraine	60,370	33,324	55.2	0.6	7.8
Belarus	20,760	6,103	29.4	0.6	1.6
Moldova	3,370	1,746	51.8	0.4	17.8
2.1.2 Baltic States					
Estonia	4,510	1,128	25.0	0.7	-
Latvia	6,450	1,690	26.2	0.7	-
Lithuania	6,520	2.256	34.6	0.6	-
2.1.3 Central Europe					
Albania	2,875	578	20.1	0.2	59.1
Bosnia/Herz.					
Bulgaria	11,091	4,059	36.6	0.5	30.4
Croatia					
Czech Republic	7,886	3,170	40.2	0.3	0.8
Hungary	9,303	4,745	51.0	0.5	4.3
Macedonia					
Poland	31,268	14,289	45.7	0.4	0.7
Romania	23,750	9,334	39.3	0.4	33.2
Slovakia	4,901	1,485	30.3	0.3	5.4
Slovenia					
Yugoslavia					

2.2 Asia

2.2.1 Central Asia	Total Land Area (000 ha) 1993	Arable Land (000 ha) 1993	Arable Land (% of total) 1993	Arable Land/Person (000 ha) 1993	Irrigated Land (% of arable) 1993
Kazakhstan	271,730	34,510	12.7	2.0	6.4
Kyrgyzstan	19,850	1,409	7.1	0.3	64.3
Mongolia	156,650	1,410	0.9	0.6	5.7
Tajikistan	14,310	816	5.7	0.1	78.9
Turkmenistan	48,810	1,415	2.9	0.4	92.9
Uzbekistan	44,740	4,116	9.2	0.2	97.6
2.2.2 West Asia					
Armenia	2,980	483	16.2	0.1	59.4
Azerbaijan	8,660	1,602	18.5	0.2	62.5
Georgia	6,970	697	10.0	0.1	57.1

Source: UNDP Human Development Report 1996

Table 3 : Economic Indicators

3.1 Europe

3.1.1 Eastern Europe	GNP (billion US$) 1993	GNP annual growth (%) 1980-1993	GNP per capita (US$) 1993	Real GDP per capita (PPP$) 1993	Agriculture in GDP (%) 1993
Russian Federation	346	- 1.8	2,340	4,760	9
Ukraine	114	- 0.5	2,210	3,250	35
Belarus	29	1.8	2,870	4,244	17
Moldova	5	-	1,060	2,370	35
3.1.2 Baltic States					
Estonia	4	- 3.9	3,080	3,610	8
Latvia	6	- 2.7	2,010	5,010	15
Lithuania	5	- 3.9	1,320	3,110	21
3.1.3 Central Europe					
Albania	1	- 1.5	340	Est. 2,200	40
Bosnia/Herz.					
Bulgaria	10	0.2	1,140	4,320	13
Croatia					
Czech Republic	28	-	2,710	8,430	6
Hungary	36	0.4	3,350	6,059	6
Macedonia					
Poland	86	0.7	2,260	4,702	6
Romania	26	- 2.3	1,140	3,727	21
Slovakia	11	-	1,950	5,620	7
Slovenia					
Yugoslavia					

3.2 Asia

3.2.1 Central Asia	GNP (billion US$) 1993	GNP annual growth (%) 1980-1993	GNP per capita (US$) 1993	Real GDP per capita (PPP$) 1993	Agriculture in GDP (%) 1993
Kazakhstan	24	- 2.0	1,560	3,710	29
Kyrgyzstan	4	0.2	850	2,320	43
Mongolia	0.7	2.3	390	2,090	21
Tajikistan	2	- 4.0	470	1,380	33
Turkmenistan	-	-	-	3,128	32
Uzbekistan	22	1.7	970	2,510	23
3.2.2 West Asia					
Armenia	3	- 14.8	660	2,040	48
Azerbaijan	5	- 4.5	730	2,190	22
Georgia	3	- 9.4	580	1,750	58

Source: UNDP Human Development Report 1996

Annex IV

CGIAR Missions in Central/Eastern Europe/former Soviet Union, 1991-1996

	CIAT	CIMMYT	CIP	ICARDA	ICRISAT	IPGRI	IRRI	ISNAR
Central / Eastern Europe								
Bulgaria	1994 / 95			1993		1992		
Czech Rep.						1992		
Estonia						1994		
Hungary	1994		1996			1992	1995	1991-93 (all)
Latvia						1994		
Lithuania						1994		
Moldova						1995		
Poland	1995		?			1992		
Romania	1994 / 95			1990		1992		
Russia		1995	1994	1991 / 94	1991 / 93	1992-96 (all)	1995	1994
Slovakia						1992 / 95		
Ukraine		1995				1993 / 95		
Central Asia / Caucasus								
Kazakstan		1995		1994 / 96		1994 / 95		
Kyrgyz Rep.		1995		1994 / 96		1994		1995 / 96
Tajikistan								1996
Turkmenistan		1995		1995		1994 / 95		
Uzbekistan				1994-96 (all)	1991	1994 / 95		1995
Armenia				1992				
Azerbaijan		1996		1996		1994		
Georgia				1996				

Annex V

ASSESSMENT OF RESEARCH AND SEED PRODUCTION NEEDS IN DRYLAND AGRICULTURE IN THE WEST AND CENTRAL ASIAN REPUBLICS

Tashkent, 5-9 December 1995
(Highlights of Workshop Summary Proceedings)

Organizers: International Center for Agriculture in the Dry Areas (ICARDA)
Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ)
Uzbekistan Academy of Agricultural Sciences (UAAS)

1. A WORKSHOP AT ICARDA's INITIATIVE

At ICARDA's initiative a workshop on "Assessment of Research and Seed Production Needs in Dryland Agriculture in the Newly Independent Republics of Central and West Asia" was organized by ICARDA/GTZ/UAAS in Tashkent from 5-9 December 1995. The workshop, supported by a grant from GTZ and hosted by the UAAS, was attended by 58 participants. These included 33 from seven Newly Independent Republics (NIRs) of Central and West Asia (Kazakstan, Tajikistan, Turkmenistan, and Uzbekistan (Central Asia), and Armenia, Azerbaijan, and Georgia (West Asia); one each from BMZ, GTZ, ISNAR, EC-Cereals/ Turkmenistan, Agha Khan Foundation Project Tajikistan, SR-CRSP/University of California-Davis, and Russia; two each from Turkey, CIMMYT/Turkey, GTZ/Tashkent, and a team of 12 from ICARDA. Kyrghyzstan could not send representatives due to national elections.

2. OUTCOMES

2.1. Establishment of Linkages with the NIR's, and Exchange of Information

The workshop was highly successful in establishing linkages with the NIRs of Central and West Asia (CWA). The workshop provided an excellent forum for the exchange of information between them and with ICARDA, CIMMYT, and ISNAR. Thus, the workshop also provided one of the first opportunities, since the break-up of the Soviet Union, for representatives of the Republics to gather together and discuss common problems facing their agricultural research and development.

2.2. General Information Learned

The workshop greatly helped understand different problems associated with agricultural research and seed production in the Central and West Asian Republics. Since the break-up of the Soviet Union these Republics have faced major problems in their agricultural research and development: yields are low; food shortages are common (except in Kazakstan); and, the governments are facing problems in sustaining agriculture R&D. Agricultural scientists of the Republics are working in isolation as they often do not have effective links with their colleagues in other Republics and with the rest of the world.

2.3. Identification of Priority Areas for Cooperation

Country presentations provided insight into the current status of agricultural research in each country, and also provided information on their present needs in research, seed production, and training.

2.3.1. At the National Level

Detailed country priority areas were identified. General consensus included the need for:

- germplasm conservation, evaluation, and enhancement in cereals (wheat and barley) and legumes (chickpea and vetch) in both irrigated and rainfed areas to fulfill the requirement of enhanced self-reliance in grains;
- proper management of natural resources (water, vegetation, and environments - steppe, mountains);
- pasture, range, and livestock management;
- organizational research in seed production;
- training;
- support and cooperation in improving national research management strategies, in light of the collapse of the former integrated Soviet system;
- research on socio-economics, land tenure, and food policy issues.

2.3.2. At the Regional Level

The five working groups during the meeting also identified priority areas of research at the regional level as follows:

(a) Genetic Resources Conservation: The priority areas included: (1)the need for creation of a Central Asian Regional Genebank in Tashkent, and of another Transcaucasian Regional Genebank in Georgia; (2) the need for initiating a Regional Collaborative Genetic Resources Network between the eight NIRs and the CGIAR Centers (IPGRI, ICARDA, CIMMYT, ICRISAT) on collection missions, development of the regional documentation system, safety duplications at CGIAR Centers, germplasm exchange, regeneration of old collections, evaluation and utilization, training, and study visits.

(b) Germplasm Enhancement: Among the food and feed crops, wheat and barley occupy the pivotal position, and thus must receive attention in their germplasm enhancement. Since the work on food and feed legumes is not well developed, efforts are needed on their introduction, germplasm enhancement and place in cropping systems.

(c) Farm Resources Management: The following relative importance/priority was accorded to the topics in soil and water management research for all seven Republics together: water-use efficiency, water erosion and mountain development, fertility, salinity and transition process/privatization: technical and economic interactions with soil and water management. These topics could be clustered into three main themes (and interest groups): (1) soil water-use efficiency (and salinity) in irrigated systems: Kazakstan, Uzbekistan, Turkmenistan, Azerbaijan, and Tajikistan. (2) mountain development and water erosion control: Georgia, Armenia, and Tajikistan (and to a lessor degree Kazakstan,

Uzbekistan, and Azerbaijan). (3) fertility issues: Turkmenistan, Tajikistan, and Azerbaijan (and to a lessor degree, Armenia, Uzbekistan, and Kazakstan).

(d) Range and Livestock: The important priority areas of research identified were: (!) public policy and land tenure systems in collaboration with IFPRI and ICARDA, (2) sustainable natural resources management of rangelands and farming zones (rainfed and irrigated), (3) livestock research focusing on dominant small ruminants (and embracing local breed characteristics), nutrition, and reproduction (with emphasis on micro-nutrient deficiencies related to meat milk, wool, and hide production, animal health (epidemiology and prophylacy), and, (4) market organization and animal products distribution.

(e) Seed Production: The important priority areas of research/activity identified were: (1) setting up a regional center to help strengthen the regional seed sector and organization of a coordination center for seed marketing, (2) help review and restructure the seed systems in the different Republics, and assist in reconstruction of the seed production, (3) help set up national seed boards and initiate a Regional Seed Committee, (4) help set up regional variety testing systems and initiate a regional variety catalogue, (5) help to organize and train seed staff of the region in management and marketing, and retraining of staff.

(f) Training: Training of scientists and technicians is needed in all the Republics. Regional courses are required in different disciplines and topics. Also required are study visits within the region, and to ICARDA, CIMMYT, IPGRI, ISNAR, and IFPRI.

3. WORKSHOP CONCLUSIONS/RECOMMENDATIONS

- the workshop served a very useful purpose of brining the Republics in CWA together, which provided for the first time an excellent opportunity to discuss with each other common problems facing their agricultural research and development, and with ICARDA and two other CGIAR Centers (CIMMYT and ISNAR). For this, ICARDA's initiative and efforts were very much appreciated by the Republics in CWA.

- the five countries in Central Asia and three in West Asia should help each other through complementary activities at the regional level through sharing of information, study visits, and elite material.

- a networking concept should be easily applicable in these Republics, on the model of ICARDA's Regional Programs.

- ICARDA should prepare a project proposal as part of ICARDA's Highlands Regional Program on (1) crop improvement and management of farm resources; (2) livestock and range development; and, (3) seed production. This project should provide additional senior staff positions (one each for cereals, legumes, resource management, small ruminant and range management, and seed production). This project will be coordinated by ICARDA but will involve technical inputs from other relevant Centers (CIMMYT, ISNAR, IPGRI, IFPRI, and ICRISAT) in addition to ICARDA. The components of livestock and range development will be linked with the SR-CRSP (UC-Davis); the component of seed production will be linked with the WANA Seed Network.

Annex VI

Proposed CGIAR Project Activity in CEE/FSU

Project proposals have been prepared by CGIAR Centers, in collaboration with NARS scientists/managers in CEE/FSU. They do not represent all that has been discussed or that is likely to emerge as CGIAR activity in the regions for the medium term. The approximate annual cost of the projects is $5 million, however, the Task Force notes that this estimate is based on proposals which are still being refined, in some cases. The projects also represent activities which are developed to the point where regional partners are identified.

The projects which are described more fully in the following pages are:

1. Collaborative Research Program for the Development of Sustainable Agricultural Production in the Central Asian Republics (ICARDA)

2. Wheat Germplasm Development for Central and West Asian Republics (CIMMYT)

3. Boosting Rice Production in the Commonwealth of Independent States, Eastern Europe, and West Asia - INGER (IRRI)

4. Sustainable Crop Genetics Resources Programmes in Eastern Europe and the Newly Independent States of the FSU (IPGRI)

5. Sustainable Forest Genetics Resources Programmes in Eastern Europe and the Newly Independent States of the FSU (IPGRI)

6. Action Research on the Evolution of the Opportunities of Agricultural Research in Developing Country Transition Economies (ISNAR)

7. Training/Workshop on Agricultural Research Policy, Organization and Management - Europe (ISNAR)

8. Training/Workshop on Agricultural Research Policy, Organization and Management - Asia (ISNAR)

9. Regional Forum - Research Implementation Workshop (ISNAR)

Project Title	**Collaborative Research Program for the Development of Sustainable Agricultural Production in the Central Asian Republics**
Region	**Central Asian Republics**
Countries	Kazakhstan, Kyrgyzstan, Tadjikistan, Turkmenistan, Uzbekistan
Collaborating Institutions	Ministry of Agriculture of Turkey, CIMMYT, IFPRI, IPGRI (WANA Regional Program), ISNAR
Executing Center	**ICARDA**

Project Summary: **ICARDA proposes implementing a regional collaborative research program to support and enhance agricultural research in the Republics of Central Asia and to link these Republics with the NARS of neighboring countries in West Asia and through ICARDA with other CGIAR centers and advanced agricultural research institutions.**

Rationale: Agriculture is of paramount importance in the Central Asian Republics. The dissolution of the USSR has disrupted agricultural production and trade and had a considerable impact on the long-standing cooperation between the Republics in agricultural research. The Republics are struggling with the development of national economies and the pressing need to meet domestic food demands. Central Asia has a marked similarity, both in agro-ecological conditions and crop and livestock systems, to other countries in West Asia, notably the highland areas of Afghanistan, Iran, Pakistan and Turkey. ICARDA is in a position, through its geographic location and close partnerships with the NARS of West Asia, to link the Central Asian Republics with the CGIAR, and with NARS of agro-ecologically similar areas of West Asia.

Goal: Increased food security in the Republics of Central Asia, achieved through sustainable increases in the productivity of crops and livestock and strengthened cooperation among the Republics and with international research organizations and NARS of countries in West Asia.

Objectives: (1) establishment of national research strategies and the organization and management of national research systems (with ISNAR), (2) agricultural sector policy analysis (with IFPRI), (3) diversification of agricultural production systems and improvement of crop and livestock productivity, (4) strengthened national seed programs, (5) strengthened human resources, and (6) enhanced cooperation among agricultural research and educational institutes in the region.

Expected Outputs: (1) national research strategies that define mandate, mission, organization, management, and inter-institutional linkages; (2) recommendations for agricultural structural adjustments and supporting policy amendments; (3) identified and tested technologies (including improved varieties, appropriate crop rotations, improved water use efficiency and soil management, improved management of rangelands and small ruminant productivity) and a sub-regional genebank; (4) improved national seed production programs and variety testing systems; (5) through the provision of training, workshops, meetings and exchange visits, a cadre of informed scientists; (6) established research and training networks in areas of common interest to the region.

Budget: Costs for establishing and operating a regional office, employment of researchers recruited to the project, equipment and operational funds for the Central Asian NARS, and human resource development and training, over an initial 3 year program, are estimated at US$ 7 million.

Project Title	**Wheat Germplasm Development for Central and West Asian Republics**
Region	**Central Asia and Caucasus**
Countries	Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Turkmenistan, Tajikistan, Uzbekistan.
Collaborating Institutions	Ministry of Agriculture of Turkey, CIMMYT, CWAR NARS, ICARDA
Executing Center	**CIMMYT**

Significance of the Project: Agriculture is of great importance to the Central and West Asian Republics (CWAR) of the former USSR. Self sufficiency for food production is a national priority for all of the Republics. Highest priority is given for wheat production. Wheat occupies approximately 15.5 million ha. in CWAR. Wheat breeding efforts were relatively low in most CWAR because the USSR managed a nation-wide germplasm testing system. Annually more than 200 new wheat cultivars were tested; today Kazakstan has less than 20 entries in the variety registration trials. The agro-climatic conditions in CWAR and the winter wheat areas in West and Central Turkey are similar. Consequently, germplasm developed in Turkey is well adapted and performs well in CWAR. The International Winter Wheat Improvement Program (IWWIP) is in a prime position to develop and provide suitable new germplasm for CWAR.

Project Objectives and Activities: The overall aim is to increase wheat production and to contribute to food security through increased yield and yield stability. For the initial phase of the project, the joint Turkey/CIMMYT/ICARDA IWWIP located in Ankara will serve as the base. This assures that immediate action can be taken since the breeding program is in place and has experience in providing germplasm to these countries. It also provides time to identify a suitable location for opening a regional office for a second phase.

Expected Outputs: The following results are expected:

- new higher-yielding, stable cultivars will be identified
- a wide range of genetically diverse wheat germplasm will be available
- a regional network for testing and germplasm exchange will be in place
- the national programs will be stronger

Budget: The initial 5 year phase will operate from Turkey. If a second phase follows, a regional office will be opened in a CWAR. The budget includes salary and operating expenses for a project coordinator / wheat breeder to be based in Ankara, and who must be fluent in Russian. The total required is US$3.8 million.

Project Title **Boosting Rice Production in the Commonwealth of Independent States, Eastern Europe, and West Asia (INGER)**

Countries Afghanistan, Albania, Bulgaria, Hungary, Iran, Iraq, Kazakstan, Pakistan, Romania, the Russian Federation, Tajikistan, Turkey, Turkmenistan, Ukraine, and Uzbekistan

Executing Center **IRRI**

Project Summary: **The International Network for Genetic Evaluation of Rice (INGER) has made significant contributions throughout the world. More than 40,000 varieties and breeding lines have been distributed since 1975, resulting in the release of 591 varieties in 61 countries. INGER has access to diverse improved germplasm from CIAT, IITA, WARDA, and NARS in Asia, Africa, and Latin America and the Caribbean. Through INGER, scientists collaborating in this 5-year project in the CIS, Eastern Europe, and West Asia will have access to this broad genetic pool, and their breeding lines will be tested globally.**

Rationale: Increasing sustainable rice yields and broadening the genetic base of farmers' varieties can only be obtained through international exchange, evaluation, and use of germplasm. Identifying and sharing germplasm requires cooperation among scientists. A germplasm evaluation network enables the unrestricted, safe exchange of germplasm across geographical and political boundaries worldwide.

Goal: To assist researchers in sharing rice germplasm, so that promising lines may be adapted or used for crossing with suitable local materials; and to enhance linkages between national, regional, and international institutions.

Objectives: (1) facilitate the exchange of improved germplasm through which superior varieties are identified and the genetic base of rice varieties is broadened; (2) improve understanding of the interactions between genotypes and environments to determine the stability of promising varieties and breeding lines; (3) classify agroclimatic conditions suitable for rice production in each participating country; (4) help identify varieties for release and breeding lines for use as parents in crossbreeding; and (5) develop human resources through training.

Expected Outputs: (1) elite rice germplasm from around the world evaluated and used; (2) superior varieties released and donor varieties for stress identified; (3) NARS strengthened for rice production; (4) interaction among NARS rice scientists and those at international Centers increased.

Budget: The budget for this 5 year project is $1,270,000.

Project Title	**Sustainable crop genetic resources programmes in eastern Europe and the Newly Independent States of the FSU**
Region	**Eastern Europe and the Newly Independent States of the FSU**
Countries	**Group A:** Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia (Former Yugoslav Republic), Moldova, Poland, Romania, The Russian Federation, Slovakia, Slovenia, Ukraine, and Fed. Rep. Yugoslavia (Serbia and Montenegro) **Group B:** Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Turkmenistan, Tajikistan, and Uzbekistan
Executing Center	**IPGRI**

Significance of the Project: East European countries have in common the influence of N.I. Vavilov and thus germplasm introduction, study and maintenance historically hold a prominent place in their national agricultural research systems. In all countries of the FSU, one institute, the N.I. Vavilov Institute (VIR) in St. Petersburg, directed activities on the genetic resources of cultivated plants. The NIS are now developing separate programmes and in Russia, the operations of the VIR are undergoing corresponding modification. Despite the presence of institutional structures and human resources, severe difficulties are being experienced with funding. The political support for the conservation of agrobiodiversity is relatively low, consequently, genetic resources conservation programmes are affected along by general cuts in funding to agricultural research. As a consequence of the financial constraints and low efficiency many genebanks are experiencing difficulties in handling the regeneration load. This is particularly the case where only medium term storage facilities are available or where large parts of the collections are maintained in the field.

All programmes of the region are facing a challenge in broadening scope from a relatively narrow focus on conservation of plant germplasm for use in breeding, to include the new directions required in Agenda 21 and the Convention on Biological Diversity. This requires a shift to encompass strategies to conserve plant genetic resources *in situ*, and with communities through use, in programmes that promote agrobiodiversity at the farm level and in agricultural landscapes.

Project Objectives and Activities: The Project[1] will promote national activities which contribute to safeguarding crop genetic resources (*in situ* and *ex situ*), strengthen the cohesion of national genetic resources programmes, and promote international co-operation. Activities will include:

- the organisation of national workshops in collaboration with national authorities to facilitate the establishment/strengthening of national co-ordination structures for agrobiodiversity conservation;
- the implementation of research contracts or other conservation related activities such as the electronic documentation of collections or the undertaking of inventories material conserved *in situ* ;
- the organisation of training courses and the sponsoring of individual training opportunities;
- the facilitation of international collaboration by involving national programmes in existing European networks (e.g. ECP/GR) and by supporting the participation in research projects with western European institutes;
- in emergency cases, the provision of technical assistance in the form of essential equipment, transfer and safety duplication of collections and collecting missions.

Expected Outputs: It is expected that within a five year time frame, and given the requested funding:

- all countries in the region will have well-established and nationally-recognised co-ordination structures for agrobiodiversity conservation, national plant genetic resources inventories, and conservation strategies;
- the immediate security of germplasm collections will be achieved in all the countries, and government commitment to long term conservation substantially improved;
- the collaboration between genebanks and the emerging private sector will be improved;
- *in situ* conservation activities will have been initiated in most countries; and,
- the collaboration with western European countries enhanced.

Budget: The budget covers a period of five years and includes the salary of an IPGRI project co-ordinator.

For Group A: $2,553,000 For Group B: $1,728,000

[1] The Project is described in detail (including analysis of the current status and milestones for monitoring of progress) in IPGRI's *Strategy and Action Plan for the Conservation and Sustainable Use of PGR in eastern Europe and the NIS of the former USSR.*

Project Title	**Sustainable Forest Genetic Resources Programmes in Eastern Europe and the Newly Independent States of the FSU**
Region	**Eastern Europe and the Newly Independent States of the FSU**
Countries	**Group A:** Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia (Former Yugoslav Republic), Moldova, Poland, Romania, The Russian Federation, Slovakia, Slovenia, Ukraine, and Fed. Rep. Yugoslavia (Serbia and Montenegro) **Group B:** Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Turkmenistan, Tajikistan, and Uzbekistan
Executing Center	**IPGRI**

Significance of the Project: Many countries, especially in central-eastern Europe, have included the conservation and sustainable use of forest genetic resources in their new national strategies for the development of forestry. However, the current economic constraints in the region make it very difficult for countries to implement these strategies fully despite the presence of institutional structures and human resources.

Research into genetic diversity variation, evolutionary history and adaptation, *ex situ* conservation and tree improvement was conducted by numerous scientific institutes in eastern Europe and the former USSR. The scientific knowledge provided by these studies is often unknown because of language barriers and other isolating factors.

The importance of *in situ* conservation of genetic resources in forest trees has been recognised. Forest gene reserves have been designated for gene conservation purposes. The existence of these forest gene reserves (gene conservation stands) is now at great risk. State, communal and private forest holdings have already been re-established in the central-east European countries during the overall transformation process which started in the late 1980's. New forest owners manage their property within the framework of completely different economic, social and technical conditions. Forest gene reserves and nature protection areas are not exempt from the reprivatization acts, and the new owners are not prevented from using their property rights. Short term gains from forests are being achieved with silvicultural methods which give little consideration to sustainability and genetic diversity.

The new private forest holdings, however, do not pose a greater problem than the previous forestry management by state forest companies. Inefficient centrally planned economies shifted more and more from sustainable forestry in 1950's to over exploitation in 1980's, using raw wood as a significant export commodity. Natural regeneration of stands as the main and simplest principle of *in situ* conservation applied in forestry was abandoned in most east European countries. Subsequently, large clear cut areas had to be planted artificially with afforestation material of uncertain genetic quality.

Project Objectives and Activities: The Project[2] will promote national activities which contribute to safeguarding forest genetic resources (principally *in situ* and where relevant through *ex situ* measures), strengthen the cohesion of national genetic resources programmes, and promote international co-operation. Activities will include:

- organisation of national and international (regional) workshops, to facilitate the development of national conservation strategies, raise awareness about the importance of conserving forest genetic resources and the development of collaborative projects;
- contract research & applied gene conservation activities documentation (support for establishment of databases;
- organisation of training courses and sponsoring training opportunities, especially for trainers of forest managers;
- facilitation of international collaboration by involving national programmes in existing European networks (e.g. EUFORGEN) and by supporting scientific exchange and the participation in research projects with west European institutes; and,
- provision of technical assistance in the form of essential equipment.

Expected Outputs: It is expected that within a five year time frame, and given the requested funding:

- all countries in the region will have well established and nationally recognised co-ordination structures for forest genetic resources conservation, national inventories and conservation strategies;
- government commitment to long term conservation will be substantially improved and a large number of forest gene reserves reactivated;
- key personnel within national programmes will have been trained; and
- research on forest genetic resources will be intensified the collaboration with western European countries enhanced.

Budget: The budget covers a period of five years and includes the salary of an IPGRI project co-ordinator.

For Group A: $3,292,000 For Group B: $403,000

[2] The Project is described in detail (including analysis of the current status and milestones for monitoring of progress) in IPGRI's *Strategy and Action Plan for the Conservation and Sustainable Use of PGR in eastern Europe and the NIS of the former USSR.*

Project Title **Action Research on the Evolution of the Organization of Agricultural Research in Developing Transition Economies**

Region **Central Asia and the Caucasus**

Countries Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Turkmenistan, Tajikistan, Uzbekistan.

Executing Center **ISNAR**

Project Summary: **This proposed two year project involves research on the past and evolving agricultural research systems of the 8 countries with in-depth study in two countries, expert consultations with development and donor organizations, and a workshop involving research leaders to explore options and develop action plans for improving their research system performance.**

Significance: The countries of Central Asia and the Caucasus are in various stages of economic transition with considerable institutional discontinuities and uncertainties in the agricultural sector. A number of agricultural development projects which involve agricultural research institutions have been initiated in these countries and many more are in the planning stages. Donor and funding agencies involved have expressed concern over the relevance and appropriateness of the existing agricultural research institutions to respond to the economic and structural changes taking place in these countries Furthermore, several of these countries are actively exploring options for improving the performance of their research systems.

Goal: To assist countries of Central Asia and the Caucasus in the development and strengthening of their national agricultural research systems.

Objectives: (1) To assess the suitability of the Academy of Agricultural Sciences and alternative models of research organization and management for the emerging market economies of the two regions. (2) To analyze the dynamics, processes and options for organizational change in agricultural technology institutions of these countries. (3) To assist these countries in evaluating their agricultural research systems in the context of current economic and social changes and to develop action plans for improving their performance.

Expected Outputs: The study will provide agricultural research leaders of the countries in the two regions with understandings, options and action plans for improving their research systems. Documentation on the systems, their evolution and options for improvement will be provided in papers published by ISNAR. Finally, the results of the study will be presented at a workshop for discussion by country research leaders. development agencies and donors for future action.

Budget: The estimated budget for the two year project, including the international workshop, is $342,600.

Project Title **Training/Workshop on Agricultural Research Policy, Organization and Management (Europe)**

Region **Eastern Europe and CIS of Europe**

Countries Albania, Belarus, Bosnia & Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russian Federation, Slovenia, Slovakia, Ukraine, Yugoslavia

Executing Center **ISNAR**

Project Summary: **This proposed project involves the development and conduct of a one-week training/workshop in Eastern Europe or the CIS countries of Europe in early 1997 to sensitize 30 high-level agricultural research managers about research policy, organization and management practices and to identify priority needs in each country for future follow-up action.**

Rationale: Agricultural technology systems of these countries were based on the needs of the Soviet Union and designed to support large State farms and cooperatives. Since the collapse of the Soviet Union in 1991, the new CIS countries are developing institutions needed to support the agricultural sector,while the Eastern European countries are adjusting their institutions to serve new emerging market economy realities. Research policies need to reflect newly developed agricultural policies. The organization of research needs immediate attention to optimize the use of current resources while building an effective unified system. Research management needs attention since resources are scarce and national research managers need to improve their management skills. Finally, it should be noted that, although the Task Force does not recommend it, representatives of Ministries of Agriculture in Belarus, Czech Republic, Poland, Lithuania, Latvia, and Estonia have recently urged that the CGIAR establish a Center in Eastern Europe, to focus on research needs of the region. This indicates that there is strong support and interest for collaboration with the CGIAR.

Goal: To assist research managers in Eastern Europe and the CIS of Europe to develop and strengthen their national agricultural research systems.

Objectives: (1) To sensitize 30 high-level agricultural research managers about relevant policy, organization and management practices and issues (training); (2) To jointly identify priority policy, organization and management needs and issues for future follow-up action in each country (workshop).

Expected Outputs: The training/workshop will provide research leaders in the 19 countries an opportunity to become aware of agricultural research management practices in other parts of the world and, therefore, increase their options for improving their research systems. It will also result in a document identifying agricultural research system needs in each country for possible action by the countries, development agencies and donors.

Budget: The cost for the preparation and conduct of the training/workshop in the region is estimated to be $75,000.

Project Title **Training/Workshop on Agricultural Research Policy, Organization and Management (Asia)**

Region **Central Asia and Caucasus**

Countries Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Turkmenistan, Tajikistan, Uzbekistan.

Executing Center **ISNAR**

Project Summary: **This proposed project involves the development and conduct of a one-week training/workshop in Central Asia or the Caucasus in early 1997 to sensitize about 20 high level agricultural research managers about research policy, organization and management practices and to identify priority needs in each country for future follow-up action.**

Rationale: The agricultural technology systems of these countries were based on the needs of the Soviet Union and designed to support large State farms and cooperatives. With the collapse of the Soviet Union in 1991, these newly independent nations are currently developing the institutions needed to support agriculture. These institutions are being built upon the fragments of organizations and resources of the past. With the slow emergence of private farming in the developing market economies in these countries, there is a clear need for new institutions and major modifications of those still existing. Research policy needs to relate to overall agricultural policy. The organization of research needs immediate attention in order to optimize the use of current resources while building an effective unified system. Finally, research management needs attention since resources are scarce and national research managers need to improve their management skills.

Goal: To assist research managers in Central Asia and the Caucasus to develop and strengthen their national agricultural research systems.

Objectives: (1) To sensitize 20 high level agricultural research managers about relevant policy, organization and management practices and issues (training); (2) To jointly identify priority policy, organization and management needs and issues for future follow-up action in each country (workshop).

Expected Outputs: The training/workshop will provide research leaders in the 8 countries an opportunity to become aware of agricultural research management practices in other parts of the world and, therefore, increase their options for developing their research systems. It will also result in a document identifying agricultural research system needs in each country for possible action by the countries, development agencies and donors.

Budget: The cost for the preparation and conduct of the training/workshop in the region is estimated to be $75,000.

Project Title **Regional Forum - Research Implementation Workshop**

Region **Eastern Europe and CIS of Europe**

Countries Albania, Belarus, Bosnia & Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russian Federation, Slovenia, Slovakia, Ukraine, Yugoslavia

Executing Center **ISNAR** in cooperation with the Czech Agrarian Chamber

Project Summary: **This one week training workshop on the application and extension of agricultural research results is to facilitate the exchange of information and experiences of researchers in the countries of Eastern and Central Europe. It is a logical follow-up to the first NARS Consultation in Prague and a complement to other ISNAR-planned activity in these countries.**

Rationale: Significant changes in the structure of farming have occurred in the past few years. New production entities need better access to the latest research and development outputs, and new ways of disseminating information must be developed in this region.

Goal: To assist farmers in Eastern and Central Europe to develop and strengthen systems of knowledge dissemination, moving from research into practical application. As well, better linkages for feed back from farmers to researchers should be developed and/or strengthened.

Objectives: To draw the attention of senior NARS leaders and scientists to the problems of technology transfer, and to develop better methods of information flow between researchers and users of agricultural research products.

Expected Outputs: The training/workshop will provide leading personalities with the latest methods of transferring research results into farming practice; also, the better articulation of research priorities should result from improved two-way flow of information about needs in the farming sector.

Budget: The cost for the preparation and conduct of the training/workshop in the region is estimated to be $43,000.